

Rational Exposition of Bharatiya YOGA-DARSHAN.

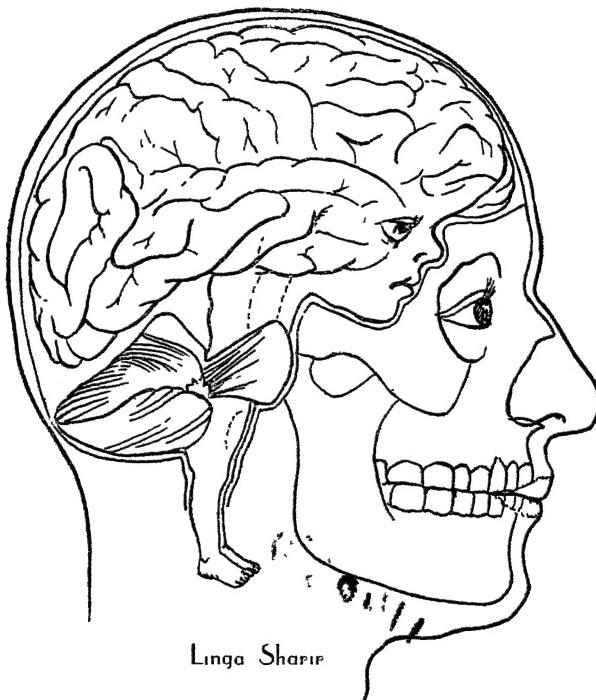
BOOK 1

**SAT-CHAKRAS
AND THEIR
ANATOMICAL IDENTIFICATION**

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BOOK 1



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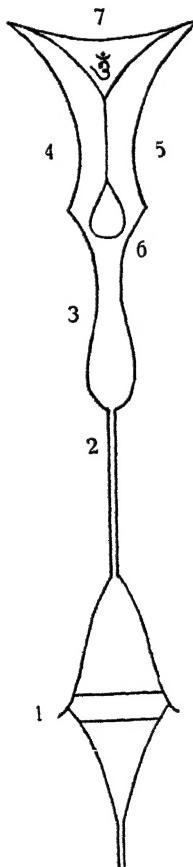
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सत्यं ज्ञानमान्दं ब्रह्म



1. Yoni sthan—fourth ventricle.
2. Brahma-randra—Aqueduct Sylvius.
3. Kshiroda Samudra—Third ventricle.
- 4 & 5. Ara & Nya Hradas—Right & left Lateral ventricles.
6. Rodhini—Fornix.
7. Shunya Sthan—Cavum septum pellucidum.

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INTRODUCTION

The system of all Vidyas learning ; has two aspects— theoretical and practical. Brahmanavidya is not an exception to this rule. In its theoretical aspect we have the Sankhya Darshan of Maharsi Kapil, Nyaya Darsan of Maharsi Gautama, Mimansa Darsan of Maharsi Jaimini, Vedanta Darsan of Maharsi Vyasa, and Vaisesik Darsan of Maharsi Kanada and innumerable commentaries on these by various commentators written in various ages. The practical side is represented by the Yoga Darsan of Maharsi Patanjali alone with its various commentaries. The courses of practical lessons of the Yoga Darsan are so arranged that a student is gradually led up to the goal of self realisation which is—the grand Advaita Tattwa.

Though we get mention of over 14 different types of Yoga in the Srimat Bhagavat Gita they can all be grouped into four classes as has been done in Siva Sanhita Sl. 9, Ch. 5.

मन्त्र योगो हठश्चैव लय योगस्तृतीयकः ।
चतुर्थो राजयोगः स्यात् द्विधा भाव विवर्जितः ।

Mantra Yoga, Hata Yoga, Laya Yoga and the Raj Yoga are the four classes. Of these, the first three are but different methods of reaching Raj Yoga which alone leads to the goal of self realisation. This basic classification has been done to suit the capacity of different types of students, as one course for all types of students is highly inadvisable. The students have been divided into four classes. Sl. 10, Ch. 5.

चतुर्था साध्यकोऽयो मृदु मध्याधि मात्रिक ।
अधि मात्रतमः श्रेष्ठो भवान्हौ लंघनतमः ।

There are four classes of students ;—1. Mridu-mild, this is the least qualified class and the great majority of men fall into this group. 2. Madhya-middle, these are more qualified than the first group. 3. Adhimatrika—These are first class students. And 4. Adhimatratama—which is the special

extra brilliant group. Of these, group one is suited to Mantra Yoga, the second group is fit for Laya Yoga, and the third for Hata Yoga. The fourth group is fit for taking up the Raj Yoga without practising any of the steps which lead to Raj Yoga.

Before proceeding to describe these sub-classes of Yoga system we shall try to lay down the aim of Yoga practice, as without the aim being clearly defined and fixed, it is not possible to grasp the meaning of the rules of exercises. It has been said before that the self realisation is the goal of human life according to Bharatiya Rishis. But what does this mean ? In what condition will the student find himself when he attains the goal ? The general conception of a Brahma-Gyani, i.e., one who has realised himself, is very vague and some passages of Vedanta Darsan, being mis-understood, have caused this vagueness. The word "Mukta" literally means one completely free of all limitations. Death and rebirth are also limitations. So a Mukta or a liberated person has no death and or rebirth. He realises and most firmly believes in the teachings of Vedanta, that this visible world is false, and has got no real existence, it exists only in the imagination of an ordinary man and "I" that is my real self is completely a separate entity unconnected with this visible world and this self is omni-present, omniscient and omnipotent." This teaching is very difficult to establish by exposition and unless realised by the student for himself, it remains merely a collection of words. The failure to establish this teaching has brought in the false conception of a Yogi or a Mukta person. One generally believes that Yogi forgets the world and has nothing to do with this world. He sits like a statue fully absorbed in his own self. He is unconscious of all his surroundings and practically goes out of the world as no good will be done to this world by his stone-like existence. This false conception of a Yogi or Mukta person brings a shudder to the ordinary men and he seldom likes to be a Yogi.

But was this statue-like existence in the world without any power to move or do, the aim for which one has been

asked to undertake all these hard training ? Were the Rishis so fool as to devise and teach a system which will make a man useless in this world ? The great Rishis, who had undoubtedly attained self-realisation themselves, were not such statue-like beings serving no good purpose in the world. Certainly that was not the aim and the lives of the great Rishis do not support it. Brahmarshi Vashistha, the greatest of all the Rishis was not a statue. On the contrary, he was a living dynamic force, guiding and directing the activities of the world in general and of a kingdom in particular. He lived, ate, slept, moved about, took part in consultations and imparted knowledge to his disciples just like an ordinary cultured man. This conception of a statue like existence is found in texts of Yoga describing Samadhi, of Hata Dipika, Sl. 107, Ch. 4.

**सर्वावस्था बिनिर्मुक्तः सर्वाचन्त्रा विवर्जितः ।
मृतशक्तिष्ठते योगी स मुक्तो न संशयः ।**

but we must not forget that Samadhi is the last phase of the Asthanga Yoga Sadhana, that is the last phase of Yoga practice. In Samadhi, the student is yet practising and has not passed out of the Yoga School. The general mistake is to accept this last phase of training as the result of Yoga. When he gains perfect proficiency in Samadhi, the last training class, he passes out and enters this world again to live his span of life and to be a strong factor in uplifting and helping his fellow men. Nobody can deny that Jagat Guru Sankaracharya, whose commentary on Vedanta is the last word in Philosophy and whose followers now subscribe to this conception of a Mukta person as described before, was himself a Mukta soul ; but he was not living the life of a statue. On the other hand, he was a great dynamic force of his time and was ever busy in debating and defeating Bouddhas and in teaching his disciples. Swami Vivekananda of the present age is another example to the point.

So, it is clear, that the aim of Yoga is not to make a man a statue, nor is it necessary that he should leave this world and take shelter in hills and forests, but on the other hand it

makes him a man full of dynamic energy, a great builder, and uplifter of society, or in other words, it makes him an all-powerful man. The Shastras lay down that नायमात्मा वलहीने लभता, none but a strong man can ever attain self-realisation. A study of the Shastras reveals 64 different types of 'vala' or power and every one of these is to be possessed by a Yogi before he is able to have self realisation. The relation of these 64 different types of Valas to the various processes of Yoga will be described later on in their proper places. Thus the prevalent idea of a liberated person, as conceived due to mis-understanding of the teachings of Vedanta, is quite opposite to actual facts. The idea of 'Mukti' being so difficult to grasp according to this teaching of Vedanta, many other teachers have tried to define it in various other ways. In Gyna-sankalini Tantra, Sl. 61, we find

श्लोकार्थं न्तु प्रवृश्यामि यदुक्तं तत्तदर्शिभिः ।
सर्वं चिन्ता परित्यागे निष्ठितो योग उच्चरते ।

which means, "in summarising the descriptions of Mukti it may be said in a few words that if one can banish all thoughts from his mind he will be a Yogi". In all the texts the words Mukta, Brahmagnye, Yogi, Gunatita, etc., are used in the same sense. Maharshi Patanjali in his Yoga Darsan has stated in his first Sutra that the stopping of all functions of mind is called Yoga—योगश्चिन्त वृत्ति निरोधः । and in his second Sutra he has stated the effects of this, viz., that then the student remains in his own self, that is, he has attained self realisation—तदा द्रश्युः स्वरूपेऽवस्थानम् . In the Bhagavat Gita Sl. 25, Ch. 14, we have

मानापमानयो स्तुलय स्तुलयो मितारि पक्षयो ।
सर्वारम्भं परित्यागी गुणातीत स उच्चरते ॥

This also lays down that when one can stop all initiatives to do anything and when even the thought of doing any work never occurs into his mind he is called Gunatita, i.e., beyond the sphere of all Gunas, qualities, which are the causes of this world. Thus the aim of all exercises of Yoga practice

is to attain a peculiar state of mind when it becomes completely irresponsible to all sensation. No thought, no idea nor attempt to do any work ever crops up in the mind. If the mind can be brought to this stage then and then only the true idea of Self will be realised and the student will be called to be liberated. He will be a dynamic force without any limitation, which is produced by our sensations.

Having fixed our aim we shall now take up the sub-classes of Yoga practice. There are certain fundamental teachings which a student must know irrespective of the class to which he belongs. Without a knowledge of these he cannot take up the practice of any of the four classes. These are : 1. Knowledge of the Sata-Chakras, 2. Shorash Adhara (16 bases), 3. Trilakshya (three aims), and 4. Byoma Panchaka—(the five elements Byoma etc.), in his own body. This has been clearly stated in Goraksha Samhita—

प्रद चक्रं षोडशाधारं तिलकं श्योम पंचकम् ।
स्वदेहे ये न जानान्ति कथं सिध्गन्ति योगिनः ।

In Yoga Sharodaya and Shoubhagya Luxmi Upanishada we get mention of nine chakras in place of Sata-chakras. Other teachers have mentioned many other chakras also. Rudra Yamal Tantra mentions a total of 17 chakras including the Satachakras. All these will be described later on in their proper places. Truly speaking there are many chakras in the body but Satachakras being the most important have gained popularity and have become widely known to the public at large. Of course, for a student who wants to take up the studies and practice of Yoga a knowledge of all the chakras in the body is essential.

All the Sat-chakras are said to be located within the Meru-danda, i.e., the vertebral column, at points corresponding to the spaces on the body described below.

1. Muladhar—in a line with the space between the anus and root of penis, that is, perineum. 2. The Swadhishthan—in a line with the root of the penis. 3. The Manipura—in

a line with the navel. 4. The Anahata—in a line with the heart. 5. The Vishudha—in a line with the throat. 6. The Ajnya—in a line with the centre of the brows. Formerly the Guru or the preceptor used to teach the exact locations of these chakras, adhars, etc. to the student and after the preliminary teaching the student was admitted to Mantra Yoga, Laya Yoga, or Hatha Yoga class as per his capacities and qualifications. Unfortunately such knowing Gurus have become rare and the expectant student is left to himself to try to locate these chakras etc. from a description of these as recorded in the various texts. Here also there is much confusion, and any attempt to locate them in the body in the places mentioned fails. Anatomically nothing resembling the descriptions can be seen in places mentioned. This failure to identify them anatomically, together with the intense desire of the modern educated Indians to try to justify the teachings of the Rishis in modern light has resulted in the introduction of unreal mystic explanations of Sat-chakras. Some declare these to be ethereal and to be known only when the student gains some Yogic power, others claim this to be present only in the living body and to disappear with death and as such not to be seen on dissection on a dead body.

Why is this failure? The rishis have definitely and repeatedly asserted that these chakras are to be seen within our body and when the 16 Adhars or bases could be identified then why the sat-chakras could not be identified. The first and foremost reason of this failure seems to be due to the change in the system of education. The system in vogue in the early days were completely different from that prevailing at the present day. Formerly students had to master the general principles and not the intricacies of the 6 Vedangas and the 4 Upa-Vedas before they were allowed to take up for study or practice the Vedas and the Tantras. This education helped them to understand the references to the different subjects in their study of the Vedas. Now-a-days even an M. A. in Sanskrit is not so equipped as to understand similar

references. Moreover, Western education has given us all a mentality of "Superiority complex". We think ourselves to be more intelligent, more educated, and better equipped with far better means of observation than our fore-fathers, the grand old Rishis of Bharat. Whenever any question of minute study like the modern microscopical studies crop up we exclaim, "How was it possible for them to know these ; they had no microscope" ? We fail to think that there are other ways of knowing things even without the use of a modern instrument. We know how this superiority complex bent of mind prompted one of the great sons of Bharat, Maharshi Dayananda Saraswati, to renounce these sat-chakras and "the whole group of rituals" based on these ; because he failed to locate them in a dead body by actual dissection.

The second cause appears to be the loose translation of Sanskrit words into English. The translation was generally taken up by modern educated men who had no training according to the old system and so failed to grasp the idea which the original author intended to express by the Sanskrit word in the texts. We know that Sanskrit is a very flexible language and one word is capable of various inter-pretations and a translator who fails to grasp the true import of the word will not be able to make a correct translation.

The third cause is the introduction of Keelak by the Rishis in all branches of learning. The word Keelak literally means a peg on which a boat is moored. The various Vidyas or learning are compared to boats which help one in crossing the ocean of knowledge. The maharshis knew that in the Kali Yuga, the present age according to the Bharatiya classification of time ; the morality and the strength of character of the people will decrease and if these Vidyas-branches of learning which give great powers to their followers, be easily understood and practised, then the degenerated person of Kali Yuga will do a great harm to the world. So they devised means by which these Vidyas will be safely moored and will be out of harm.

This method is described as Keelak in every Vidya. No body will deny the wisdom of the great Rishis in so hiding the learning for we have seen with our own eyes the bad effects and the immense destructions brought into the world with the discovery of the Atom Bomb. This knowledge of manufacturing Atom Bomb fell into the hands of unscrupulous politicians and war-mongers and the result was unforeseen destruction. If the powers to be gained from the Vidyas of the Rishis, which will be described later on, compared to which the powers of Atom bomb becomes insignificant, be easily understood and available to all, these unscrupulous persons will end the world in a day. To avoid such a calamity the Rishis have introduced this system of Keelak in all the mantras and tantras, generally known as Vidyas. The Guru was to undo the Keelak while teaching a student, lest such knowing Gurus be rare and gradually disappear the Rishis have left the key of the Keelak in some of the texts, which can be found on intelligent search of these texts. In many cases the Keelak is based on the different meanings of one and the same word. The apparent meaning of the word misleads, and only a deep search into the other meanings of the word will give the clue. It has for this reason been stated.

ऋषिणां भारती भाति सरला गहणान्तरा ।

वृधाः स्तव मोदन्ते मुद्धन्ते प्राकृताः जनाः ।

The sayings and the writings of the great Rishis appear very easy but has very deep inner meanings ; ordinary people will be misled but the wise men will enjoy them. We shall try to show the Keelak in different subjects as they will come up.

All the texts on Yoga and Tantras describe these sat-chakras in the places mentioned above ; but is it not strange that they cannot be seen in the places on actual dissection ? A close study of all the texts dealing with the subject, reveals that these chakras are to be found in the "sookshma" or the "Linga sharir" and not in the 'sthoola' or the gross body. So

long all searches were being made in the gross body and the result was a failure. We are to search for these in the 'sookshma' or the 'Linga sharir'. Acharya Bhaskar Rao, a great practical Yogee, a vastly learned man and a great commentator on many works on Yoga and Tantras has clearly written in his commentary on the famous Vamakeswar Tantra that लिङ्गं शरीरे हि सुषुम्ना नाडीमात्रित्य द्वा त्रिंशत् पद्मानि, all the 32 padmas or chakras are located in the Linga sharir. But what is this 'Linga deha'? Where is it located? Unless we can find out what it is, and where it is, we will not be able to go to the truth of these sat-chakras. Jagat Guru Shankaracharya has described the 'Linga sharir' thus—

इह तावदक्षदशकं मनसा सह बुद्धि तत्त्वमय वायुगणः ।

—
इति लिङ्गं मेतदसुना पुरुषः सहस्रातो भवति जीवः ।

The ten senses, mind, buddhi together with the 5 Vayus go to form the 'Linga sharir' of the Jeeva i. e., the man. This definition is capable of two interpretations. 1. Its energy aspect and 2. Its apparatus aspect. All the commentators have discussed at large the energy aspect, and its apparatus aspect has sunk into oblivion. But we know that energy can not work and manifest itself without the help of an apparatus. There are Radio waves all round us, but we can have no knowledge of their presence if we have not got a Radio set to catch the waves. Many books describe the 'Linga sharir' to be a small figure of about the size of the thumb ; and this body is very fine, ethereal so to speak, which leaves this gross body on death. This is the description of the energy aspect of the "Linga sharir" and we shall explain the meaning of the thumb size later. That there is a corresponding apparatus aspect of the "Linga sharir" in the human body is supported by the Sl. 84, 85, & 86 of the Goraksha samhita as well as Sl. 52 & 53 Ch. 5. of Shiva samhita. These read as follows :—

चातुर्विधस्य चान्नस्य रस ख्याधा विभज्यते ।

तस्य सारतमोलिङ्गं देहस्य परिपोषकः ।

सत धातु मयं पिण्डं इति पुषा ति मध्यगः ।
याति विन्मुत्र हृषेन तृतीयः सप्ततो बहिः ।

The Rasa chyle of the food we take is filtered in the system twice. The final filtrate feeds and nourishes the linga sharir, the first filtrate nourishes the gross body and the residue escapes out of the body as urine and stool. This description of the process of digestion is fully supported by our modern Physiological knowledge. We know that the chyle is filtered in the intestines and the kidneys and stools and urine are formed. On mixing with blood it circulates in the whole body nourishing every cell. On reaching the brain this blood is filtered again in the chorioidal plexuses and the Cerebro-spinal fluid is formed which nourishes and supports the brain. If the ten senses, mind and buddhi which make the Linga body be only energy then it cannot be fed and nourished by the Rasa. Therefore the apparatus—the nerve cells of the brain—which is acted on by the energy producing the senses, buddhi etc., is the Linga sharir, as these are fed and nourished by the C. S. fluid, the final filtrate of the Rasa. This definitely establishes the brain to be the Linga sharir as referred to by the Rishis. Now we are to find out the anus, penis, navel, heart etc. of this Linga sharir ; and then if we search those places of the Linga sharir we are sure to meet with success and will be able to locate and identify the chakras there. That we will have to search for these places anus etc. in the brain is clearly directed by the Goraksha samhita Sl. 76. Ch. 1.

गुदमूल शरीराणि शिरस्तत्र प्रातीष्टतम् ।
भावयन्ति शरीराणि आपादतल मस्तकम् ॥

The terms anus, penis etc. as termed in connection with the description of the chakras are all located in our brain ; and a Yogi is to imagine the whole body from head to feet as located in his own brain. In the figure on the cover of this book we have tried to show the location of this Linga sharira in the brain and the figure, though ludicrous, will be sufficient to bear it out.

Looking at the universe we find apparently it consists of two things ; (1) matter and (2) energy, Reasoning and advanced knowledge find in the end that these two are not different but are really one and the same. The Rishis also started with these two conceptions Jara—matter and chaitanya—energy and in Vedanta, literally meaning the end of knowledge, found the truth that this difference of Jara and Chaitanya is a false conception which they called Maya ; in reality they both merge in one point called Brahman. In all branches of learning the Rishis have introduced this original conception of duality of matter and energy in the beginning. In the study of the human body the same rule has been followed and we find descriptions of two bodies (1) Sthool—gross material body and (2) Sookshma or Linga—the energy body, so to speak. In describing the energy aspect of the body they had to treat of the apparatuses which produced the energies. This description of the apparatuses ought to have gone with the description of the material body as they are all made up of matter ; but they being connected with the production of energy was separated from that section and included in the description of the energy aspect of the body. It is for this reason that we fail to find any description of the nervous system in any of the text books of Ayurveda. The apparatuses producing the energy i.e., the nervous system has been described in the Tantras and the Yogic texts, which have taken up the description of the Chaitanya—energy, under the name of Linga Sharira. Failure to grasp this, the fundamental principle of description of the Rishis, has caused all these confusions. The apparatus aspect of the energy is the Linga Sharira, our Nervous System—the Brain and other parts.

- Another objection may be raised here about locating the Linga sharir, in the brain. These chakras are described to be Dhyan-gamya that is, to be known only on meditation. This description is another Keelak, and is used to mislead an average man. Certainly when we are to locate these chakras in our own body we must have to imagine their existence in

the places identified, as it is impossible to dissect once own body and see the chakras. But this does not mean that in the body of others who are dead, we will not be able to see them on dissection.

Having thus identified the Linga sharir we shall now try to locate the sat-chakras here ; and for this, in the beginning we will have to bring out the salient features, from the various descriptions of the sat-chakras, which will help us in the identification. Therefore, in the first chapter of this Book 1, descriptions of the sat-chakras as per various texts will be undertaken together with details of other chakras found in those texts which will help identification. This will be followed by a chapter on Adhars etc. which are also essential for a student. The third chapter will be a refresher course of modern Anatomy and Physiology. The fourth chapter will deal with the comparison and identification of these parts. The fifth chapter will describe the significance of the Sanskrit alphabets which are imagined as located on the petals of the chakras. This with a glossary of the Yogic terms and a list of books referred to, will complete the first book of this attempt towards the rational exposition of the Bharatiya Yoga Darshan. In the second book of the series we will take up a detailed description of Yoga, the 64 different powers that are to be gained by the practice of Yoga and their relations with the different steps of Yoga practice ; the details of Adhikar, capacity of students, which will help one to find the class of Yoga that will suit him ; the preliminary directions to be mastered for admission in the Yoga school, like the Sat-karmas, the six exercises for purifying the body ; restriction of food and habits, time and place suited for beginning Yoga practices etc. In the third book of the series will be taken up the considerations of Mantra Yoga. In it will be found the real meaning of the mantras, how the various mantras have been formed, how to select the suitable mantra for oneself, the different stages of mantra sadhana viz. Pooja—worship, Japa—rules of repetition of mantra. Homa—worship in fire, Tarpan—

process of satisfying the Deity, and Abhiseka—establishing the effects of the sadhana in ones own body. In the fourth book we propose to deal with the second school,viz., the Laya Yoga, and all its details. The fifth book will deal with the Hatha Yoga including rational expositions of the different steps like Asan, posture, Pranayam exercise of the nerve forces, Pratyahar method of collecting and concentrating the ever fickle mind, Dharana forming clear fixed conception of the aim of sadhana, Dhyana meditation, continuous uninterrupted flow of thought on the aim, and finally Samadhi which means the stage when the object of thought, the process of thought and the thinker is united in one and as a result the mind becomes calm and vacant fit to receive the reflections of the Self or Brahman. In the sixth book, the last of the series, we will describe the Raja Yoga and the much abused Koula Sadhana and the result of the Yoga practice. Thus it is hoped to deal with the full system of Sadhana-spiritual culture of the Bharatiya Rishis, in a rational way in six volumes. It is an unique attempt and may the Almighty Mother, who is the fountain head of this and all other inspirations, bless and crown it with success.

SAT-CHAKRAS AND THEIR ANATOMICAL IDENTIFICATION.

BOOK I

CHAPTER I.

Description of Sat-chakras and other chakras from various texts.

Before starting to cull all information about Sat-chakras from various works it will be of advantage to classify the works according to their ages. This is needed in order to show how the pure knowledge of the Rishis gradually deteriorated and mysticism crept in making the subject vague and almost unintelligible. The knowledge of Sat-chakras was based on accurate Anatomical findings and it is well known that since the advent of Buddha the study, and specially the practical study of Anatomy, was abandoned. For want of this practical work gradually the pure knowledge of Anatomy was mixed up with imaginary conceptions resulting in a chaos. This subject has been very ably dealt with by Mahamohapadhyaka Gana Nath Sen in his famous Sanskrit works "Pratyaksha Shariram" and "Sharir Parivasha". So the classification of the available texts from which descriptions of Sat-chakras are to be culled will be placed under two heads, those before Buddha and those after him. Vedas, Upanishads and some of the Tantras, specially the Rudra-Yamal Tantra and the Vamakeswar Tantra, belong to the first group and the rest of the works are placed in the second group. The most widely known description of Sat-chakras is from the "Sat-chakra Nirupana" by Purnananda. The exact age of the author is not known but certainly he flourished after Buddha. The book has got 57 Slokas. The slokas contain a lot of similes and rhetoric and it will be useless to quote the whole book here. Its main features are as follows. On the outside of Meru there are three Nadis-Nerves-called Ida

on the left, Pingala on the right and Shusumna in the centre line. The Shusumna Nadi looks like a flower of Datura stramonium and extends from the Perineum to the centre of the brain. Within this Shusumna Nadi there is a fine Nadi called Vajra and within that again there is a third Nadi called Chitrani. This Chitrani extends through the centre of all chakras located in the Shusumna. The Sat-chakras are at different levels. The first chakra is called Muladhar Chakra and is said to be located within the Shusumna Nadi at a level with a point in the Perineum midway between the anal opening and the origin of the scrotal fold. It has four petals and the letters ब, श, ष, स, of the sanskrit alphabet are located on them. The Kulakundalini Sakti or the much talked of serpent power of the Bharatiya Rishis is located here. She is the force which causes and controls respiration and as such is the vitality of the organism. There is a triangular space between the four petals called Yoni or pudendum pubis. This Yoni is facing the west, i.e., the back side of the body. Inside the triangle there is a Linga, phallus, called the Swayambhu Linga, which is oval in shape and of the size of a small plum. The Kula-Kundalini shakti is said to be lying on the top of this Linga, coiled up like a serpent and closing the passage called the Brahma-randhra which leads upto the Sahasrar.

The second chakra is called the Swadhistan chakra. It is within the Sushumna at a point in a line with the root of the penis. It has six petals and the six letters ब, भ, स, ष, र, ल, of the Sanskrit alphabet are located on them. Higher up in the Sushumna at a level with the umbilicus is the third chakra called the Manipur chakra. It has ten petals and the ten letters ङ, ठ, ण, त, थ, ठ, ध, न, प, फ are located on them. Further up at a level with the heart, within the Sushumna, is fourth chakra called the Anahata chakra having 12 petals with the 12 letters क, ख, ग, घ, च, छ, ज, झ, ञ, ट, ठ on these petals. Another Linga, phallus, called Van Lingam is located here on its western face. The fifth chakra is called the Vishudha

chakra and is located within the Sushumna nadi at a point opposite the pomum Adami or the Adam's apple in the throat. It consists of 16 petals and the 16 vowels of the Sanskrit alphabet are located on them. Near the end of the Sushumna nadi in a line with the point between the two brows near the root of the nose, is the sixth or the last chakra called the Ajnya chakra. It has two petals and the letters ह ञ are located on them and in between the petals there is a silent letter. Thus in the six chakras there is a total of 50 petals with 50 letters of the Sanskrit alphabet. As already mentioned, the Kula-kundalini shakti is located in the mooladhar. She is the creative force of the universe and is said to be sleeping in a trance sleep, the Yoga nidra, and when she is awakened from this slumber by Yoga practice she ascends to the Sahasrar which is Her real abode and joins with Atman or Brahman whose manifested energy She is. This union is the goal of the Yoga sadhana. When this is achieved the Yogi percieves all supernatural truths. The re-surrection of the soul from the grave of un-truth becomes an actual fact and perception of beauty, which is an attribute of the Self, fills the heart with joy. Swami Vivekananda in his book "Raj-Yoga" defines Kundalini shakti as follows :—"The centre where all residual sensations are, as it were, stored up is called the Muladhar chakra, and the coiled up energy of the actions, is Kundalini the coiled serpent power".

Each of these six chakras has a shakti which controls its own activities. In addition to these independent shaktis of each chakra there is a Universal shakti which has the power of controlling all these six chakras mentioned above. In the physical form she is lying dormant coiled up like a serpent in an individual. When she is awakened by the Yoga practice the individual gains for himself the power of performing miracles. According to the "Hatha yoga pradipika" the Kundalini is said to be guarding the opening of the passage called Brahma-randhra which leads to the seat of Brahma. The area where the first Kanda is located is called the

Mool-kanda which is said to resemble a flower of Datura Fastuasa, the common thorn apple stramonium. In Goraksha samhita there is a description of a Kalpa-yoni just above the Kanda. Its size is about 4 fingers and it is about the same size in breadth ; it has the shape of a bird's egg, broad above and narrow below, and it is covered with a soft plaited cloth like material. There are two yonis, triangles, one on the west face of the mool-kanda with its apex downwards and the other on the west face of the Kalpa-yoni with apex upwards. The bases of these two triangles overlap and a six cornered rhomboidal figure is formed. The triangle with appex down is called shakti triangle and that with apex up is called Bahni, fire, triangle. The two triangles together is called the "Yoni-sthan".

This is the common description of sat-chakras. In some books there are some differences. In Goraksha samhita and Shreetatwa-Chintamoni the Swayambhu Lingam is placed in the swadhisthan chakra. In some other books we find the location of the Kanda in a line with the umbilicus and Kundalini is also is said to be lacated here. In all books of the post Buddha period the Ida and Pingala nadis are said to emerge from the Mooladhar and to go to the nostrils. The oldest of all the Bharatiya scriptures is the Rig-veda. In the Soubhagya-Luxmi Upanishada of this veda we find :—

अथ हैनं देवा उचुर्नव चक्र विवेकमनु ब्रुहिति । तथेति सहोवाच
आदिनारायन । आधारे ब्रह्मचक्र लिरावृत्ति भगमगडलाकारं तदमुखं
देवशक्तिः । पावकाकारं धारयेत् तदैव कामरूपपीठं सर्वकाम फल प्रदं भवति ।
इति आधार चक्रम् । द्वितीय स्वाधिष्ठान चक्रं पड़दलं तन् मध्ये पश्चिमाभिमुखं
लिङ्गं प्रवालाङ्कुर सद्गृहं धारयेत् तदैव उड्यानपीठं जगदाकर्षन सिद्धि संभवति ।
तृतीयं नाभि चक्रं पंचावत्तं सर्पं कुटिलाकारं तन्मध्ये कुरुडलिनिं वालाकं
कोटि प्रभां तनुमध्यां धारयेत् । सामर्थ्यं शक्रि सर्वसिद्धि प्रदा भवति ।
इति मनिपुर चक्रं । हृदय चक्रं मष्टदलमधोमुखम् । तन्मध्ये ज्योतिर्मय
लिङ्गाकारं धारयेत् सैव हंसकला सर्वप्रिया सर्वलोक वश्य करि भवति ।
कण्ठ चक्रं चतुरंगुलम् तद वामै इडा चन्द्र नाडी-दक्षिणो पिङ्गला सूर्य नाडी
तन्मध्ये सुषुप्तां श्वेत वर्णां धारयेत् । तालु चक्रं तदामृतधारा प्रवाहः ।

घन्तिका लिङ्गमूल चक्ररन्ध्रे राजदन्तावलम्बिनी विवरं दशमद्वारं तत्रशुन्यं धग्येश्वित्तलयो भवति । सप्तमं भूवकं अङ्गुष्ठ मात्रम् तत्र ज्ञान नेत्रं दीपशिखा कारं धग्येत् तदेव पालकदं वाकसिद्धि भवति । आङ्ग चक्रमध्यमं ब्रह्मरन्ध्र निर्वाण चक्रं तत्र सुचिका गृहेतरं धूम्रशिखाकारं धग्येत् । तत्र जालन्धर पीठं मोक्ष प्रदं भवति । परब्रह्म चक्रं नवममाकाश चक्रम् । तत्र षोडशदल पद्ममूर्छमुखं तन्मध्यं कर्णिका दिकुटाकारा तन्मध्ये ऊर्ढं शक्तिकां पश्यन् धग्येत् । तत्रैव पूर्णं गिरि पीठं सर्वच्छा सिद्धि साधनं भवति । इति ।

This description broadly means that on being asked by the Devatas to describe the nine chakras, the Adi Narayan said that the first chakra is located in adhar where there is a triangle which is the seat of all Deva-sakti. One is to imagine a flame here ; the Kamrup Peetha is located here. Concentration at this point gives fulfillment of all wishes. The second chakra is the Swadhisthan with 6 petals. On its west face is a Linga, phallus, looking like a bead of coral. One is to meditate on this Linga ; the Uddian peetha is located here and the effects of concentration on this chakra is to gain the power of supreme attraction i.e., one is able to attract everything in this world. The third chakra is the Navi chakra, and one is to imagine a very bright serpent like form with 5 coils in her body. The Kundalini is located here concentration here gives strength and supremacy. In the heart is the 4th chakra with 8 petals. One is to imagine a bright Linga here. This is the cause of Hang-sa, (respiration). Concentration here gives the power of subjugating every man. The 5th chakra is placed in the Kantha, throat. It covers a space of 4 fingers. The Ida nadi is located here on the left and the Pingala nadi is on the right. In between these two is the Sushumna nadi whose colour is white. Above it is the Talu, palate, chakra, Amrita nectar, is flowing here and it is the sixth chakra. Near the root of uvula in the mouth, in a line with the root of Raj-danta, molar tooth, there is an opening called the tenth opening of the body. One is to imagine a vacant space here, and concentration on this produces equanimity of the mind. The seventh chakra is

called the Bhoo-chakra and is of the size of the thumb. The eye of knowledge is located here and is like the flame of a candle, concentration on which gives the power of ruling on everything and also Vak-siddhi, which means that what ever is spoken of comes true. The 8th chakra is called the Ajnya chakra. The Brahma-randhra ends here. The opening is very fine like a needle point. One is to imagine here a column of smoke and the Jalandhar peetha is located here, and concentration on this gives Moksha, liberation. Above this there is the 9th chakra called the Para-Brahma chakra. It has 16 upward facing petals and in its centre is a triangle. In the centre of this triangle one is to imagine the Urdha, upper, shakti. This gives one complete Sidhdhi, success.

This description of Soubhagya-Luxmi Upanishad seems to be incomplete. Some parts must be missing, because there is no mention of the locations of the first two chakras ; nos. of petals in the 1st. 3rd. 5th. 6th. 7th. and 8th. are not mentioned. The "Yoga-swarodaya" also describes nine chakras like Soubhagya-luxmi and its description appears to be more complete. It reads thus :—

मूलकन्द स्थले चैका नाड़ी तेजस्विता पूरा ।
 गुदोद्देहे सा विमागाभूदिङ्गा नाम शशि प्रभा ।
 शक्ति रूपा महानाड़ी धग्नानात् सर्वार्थदायिनि ।
 दक्षिणेऽपि कुलाख्येति पुंरुषा सूर्य विग्रहा ॥
 मध्य भागे सुषुमनाखण्डा ब्रह्मविष्णु शिवात्मका ।
 शुद्धवित्तने सा झेया विदुत कोटि समप्रभा ॥
 सुषुमनाल्ल समाप्तिस्य नवचक्रं यथाशृणु ।
 मूलाधार चतुर्स्पतं गुदोद्देहे वर्तते महत् ॥
 तत्त्वमध्ये स्वर्णं पीठेतु विकोण मण्डलम् परम ।
 तत्र वहि शिखाकारा मूर्त्तिः सर्वत सिद्धिदा ॥
 अस्या धग्नां मनोमध्ये विना पाठेन वाङ्मयं ।
 सर्व शास्त्रानि संस्कृत्य सदा सुरति योगवित् ॥

लिङ्गमूलेतु पीठाभं स्वाधिष्ठानन्तुषड्दलम् ।
 तन्मध्ये बालसूर्यभं महज्ञोति: सुसिद्धिदम् ॥
 धगानाञ्च वर्द्धते त्वायुः कन्द्रपं समता ब्रजेत् ।
 तृतीयं नाभि देशेतु दिव्यदलं परमाक्षुतम् ।
 महामैथ प्रभं तत् तु कोटि विद्युत सम प्रभम् ।
 कल्पान्ताग्नि समं ज्योति तन्मध्ये संस्थितम् स्वयम् ॥
 अनाहतमश्तपीठं चतुर्थं कमलं हृदि ।
 सूर्यं पत्रं महज्ञोति महासुक्ष्मन्तु चाक्षयम् ।
 प्राणवायोः स्थलंचास्य लिङ्गाकारन्तु कर्णिका ।
 कालिकाख्यं कर्णिकेयं अस्या मध्येतु कुण्डली ॥
 तस्य सङ्गी जीव ईति अनन्तो वलरूपतः ।
 अस्य धगानं जगद्वश्यं खेवरी सर्वगो भवेत् ॥
 कलापत्रं पंचमन्तु विशुद्धं करण देशतः ।
 अस्य मध्ये पुमानेके: कोटि चन्द्र सम प्रभा ॥
 आङ्गाख्यं पष्ठकं चक्रं भूबोर्मध्ये द्विपत्रकम् ।
 अग्नि ज्वालानिमं ज्योति: पुंसङ्घीतो बिवर्जितम् ॥
 चतुर्षष्ठीदलं तालु मध्ये चक्रन्तु मध्यमम् ।
 पीयुष पुण्णं कोटिन्दु सत्त्विभममृत स्थली ॥
 तन्मध्ये धटिकासङ्गा कर्णिका रक्त सत्त्विभा ।
 सहचेन्दु कला तत्त्वामृतधारा स्वबल्यसौ ॥
 ब्रह्मरन्धे इष्टमं चक्रं शतपत्रं महाप्रभम् ।
 जालन्धर नाम पीठं एतन्तु परिकीर्तितम् ॥
 नवमन्तु महाशून्यं चक्रान्त तत् परात् परम् ।
 त्रिकोणं कर्णिका तत्र वर्तते परमैश्वरी ॥

The meaning in short is this :—In the Moola-kanda there are three important nadis, the Ida on the left, the Pingala on the right, and the Sushumna in the centre. This division into three takes place a little above the anus. Within the Sushumna nadi the nine chakras are located. From below as we proceed upwards the first one is the Mooladhar chakra with 4 petals and it is located just above the anus. There is a

triangular space in this chakra. Above it in a line with the Linga, phallus, is Swadhisthan with six petals. The third chakra is called Manipur and has 10 petals. It is located in a line with the umbilicus. Above it there are 8 seats of eight different types of energy. Then comes the fourth chakra called Anahata with 12 petals. It is in a line with the heart and is the seat of Prana-Vayu. There is a Linga, phallus, here and the Kula-Kundalini shakti is located here. The Jeevatma lives here in her company. Above it is the Vishudha chakra with 16 petals in a line with the throat. The Ajnya chakra with two petals are located above it in a line with the centre of the brows. Above the Talu, palate, is located the madhya, middle, chakra with 64 petals. In its centre is a reddish Ghatika with the half moon which produces the Amrita, nectar. This is the seventh chakra. In the Brahma-randhra is the eighth chakra with 100 petals. The Jalandhar Peetha is located here. The 9th chakra has a great vacant space in its centre in the form of a triangle, and the Almighty Mother, the supreme Energy of creation is located here.

Sat-chakras have been described in various Tantras. Of these the Vamakeswar Tantra and the Rudra-yamal Tantra stand out as the most authoritative and old works. In Vamakeswar Tantra ch. 6 sl. 25 and 26 we get.

अकुले विषुसंझे च शक्ते वह्नौ तथा पुनः ।
नाभावनाहते शुद्धौ लम्बिकाग्रे भ्रूवोन्तरे ।
इन्दौ तदुद्देश्यिन्यां नादे नादान्तं पदच ।
शक्तौ पुनर्ग्रीष्मिकायां समनोन्मनगोचरे ॥
महाविन्दौ पुनश्चैव विधा चकं तु भावयेत् ॥

These mean that first there is the Kula chakra, then Vishu chakra, then comes the Shakti, on it is the Vanhi, and on that is the Navi chakra then another called Anahata. Over it comes the Vishudha, then there is a chakra in a line with the Lambica, tonsil, and one in a line with the centre of the brows. Above this chakra is a full moon and a half moon. Then comes the Rodhini and above it is the Nada and the Nadanta. Then

comes the Shakti, Vyapika, Samana, and Unmana one above the other. Beyond Unmana is the seat of the Maha-Vindu. Commenting on these slokas the great commentator Acharya Bhaskar Rao has written :—

लिङ्गं शरीरे हि सुषुम्ना नाडीमश्रित्य द्वाणिंशत्पद्मानि तेषाद्यन्तयोः सहस्रे
पञ्चेद्वे ऊर्ध्वा धो मुखे वर्तेते । सर्वाधिःस्थित सहस्रदल कमलोपर्यष्टुदलं
तदुपरि षड्दलं तदुपरि षूलाधारअदिनि चक्राणिति स्थितिः । तत्र षूला-
धाराधः स्थितं षड्दलमेव विषु चक्रं तद्धःस्थित अष्टुदले कुलपद्मम् । तादूश
कुलपद्माधःस्थितं अधो सहस्रामैव ।

It is in the Linga sharir only that all the 32 chakras are to be found located within the Sushumna nadi. On either end of the Sushumna nadi there are the two Sahasrars. The lower Sahasrar is facing up and the upper Sahasrar is facing down. Just above the Lower Sahasrar, within the Sushumna nadi are to be found first the 8 petalled Kula chakra, and then there is the 6 petalled Vishu chakra. Above it is the Mooladhar and the rest of the Sat-chakras.

The Rudra-yamal Tantra has described 8 other chakras before the Sat-chakras are mentioned. These are :—

सुक्तम फलं विजानीयात् चक्रं नाम शृणु प्रभोः ।
काम चक्रं फल चक्रं आज्ञा चक्रं च सारदम् ।
प्रश्न चक्रं भूमि चक्रं स्वर्ग चक्रं ततः परम् ।
तुला चक्रं राशी चक्रं षट् चक्रं तिगुणात्मकं ।
सार चक्रं उल्का चक्रं मृत्यु चक्रं क्रमात् प्रभो ।
षट्कोणं चात्र जानीयात् अनुलोम विलोमतः ॥

The names of the chakras are in order from below upwards, 1. Kam chakra 2. Phal chakra, 3. Ajnya chakra, 4. Prasna chakra, 5. Bhoomi chakra, 6. Swarga chakra, 7. Tula Chakra, 8. Rashi chakra, 9. The famous Sat-chakras, which includes (the Mooladhar, 10. Swadhisthan, 11. Manipur, 12. Anahata, 13. Vishudha, 14. Ajnyá,) 15. Sara-chakra, 16. Ulka chakra and 17. The Mrityu chakra. From the Sat-kona, the six angled figure, which is in the Mooladhar,

these chakras are to be found up and down in order. This means that Mooladhar is in the centre and a Sat-kona is to be seen here, below this gradually going down are these 8 chakras :—1. Rashi chakra, 2. Tula chakra, 3. Swarga chakra, 4. Bhoomi chakra, 5. Prasna chakra, 6. Ajnya chakra, 7. Phala chakra and 8. Kama chakra. Similarly from Mooladhar gradually going upwards are these 8 chakras :—1. Swadhisthan chakra, 2. Manipur chakra, 3. Anahata chakra, 4. Vishudha chakra, 5. Ajnya chakra, 6. Sara chakra, 7. Ulka chakra, and 8. Mrityu chakra. In this connection it is to be noted that the two chakras one below and the other above the Mooladhar have been named as the Ajnya chakra. Of these the Ajnya chakra which is located below the Mooladhar has 4 petals while the one above the Mooladhar and which forms the last chakra of the Sat-chakras is a two petalled chakra.

It is clearly stated in the Rudra-yamal that one who is to start the Sadhana, practice, with the chakras must begin with the Kama chakra.

न जानन्ति वालका ये तेषां योगादि सिद्धये ।
कामचकं कामरूपं कामना फलं सिद्धये ।

A great part of the Rudra-yamal is missing and so a systematic description of all the chakras are not to be had. Still the few scattered description of these helps a lot in our effort to identify the Mooladhar. There is no doubt that if the Mooladhar can be identified the identification of the remaining chakras will be easy. In the description of the Tula chakra in sl. 18 & 19 ch. 19, of Rudra-yamal as well as the sl. 81, 82 & 83 of the same ch. we find :—

भावसिद्धिर्भैत् तस्य ये भजेदात्म विक्त्वा ।
दल मध्ये तुला चक्र चतुर्स्कोने गृहणी च ।
द्वार्तिंशद्विन्दु रूपानि शान्ति प्रत्यि विभेदने ।
तुलाचक्रस्य नाडीभिद्वाविशत् प्रत्यि भेदनम् ।
गलदेशावधि धारान् मैह वाहो-प्रकारयेत् ।
द्वार्तिंशत् विन्दु भेदं च मूला- धारावधिस्थितम् ।

सुषुम्ना वाह्यदेशे च यद् यद्ब्रिन्दु पदं प्रभो ।
क्रमशः क्रमशो भित्वा खेचरी भवति ध्रुवम् ॥

These slokas clearly mention that the Tula chakra is located outside the Merudanda, vertebral column, from below right up to the end of the throat. There are 32 granthis, knots, in it and it extends up to the Mooladhat. The student must have to pierce these granthis gradually from below upwards if he intends to be a good Yogi. In Rudra-yamal Ch. 23 we have mention of 32 different types of Asanas, postures of sitting, which help one to pierce these granthis, SI. 34 & 35 ch. 23 :—

असनानि शृणुहेतत् द्वार्किंशत् संख्यकानि च ।
सवगापसवग योगेन द्विगुणं प्रभवेदिह ॥
चतुःषष्ठ्यासनानीह बदामि वायु साधनात् ।
द्वार्किंशत् विन्दु भेदाय कल्पयेद्वायु वृद्धये ॥

There are 32 different types of Asana, postures, which one will have to practice for piercing these 32 granthis of the Tula chakra. These are to be practiced once with the right leg starting first, and then again with the left leg starting first, thus each Asana will be doubled making a total of 64 Asanas. These are necessary not only for piercing the granthis but also for increasing the Vayu in the body.

Rudra-yamal has described these Sat-chakras beautifully in ch. 27, sl. 48 to 70 which we quote below :—

विश्वं शरीरमाकाशं पञ्चभूताश्रयं प्रभो ।
चन्द्रसूर्यग्राहिर्ते जोभिजीव ब्रह्मैक्यं रूपकम् ॥ १
त्रिस्य कोट्यो दक्षिणतः शरीरेण नाभग्रामतः ।
तेषु मुख्या चतुर्दशास्तासु तिक्ष्णो व्यवस्थिता ॥ २
प्रधाना मेरुदण्डेऽपि सोम सूर्यग्राहिरूपिणी ।
नाडीतय स्वरूपेण योग माता प्रतिष्ठिता ॥ ३
इडा वामे स्थिता नाडी शुक्रातु चन्द्ररूपिणी ।
शक्तिरूपा च सा नाडी साक्षाद्मृत विग्रहा ॥ ४

दाढिमी कुसुम प्रख्या विषाख्या परिकीर्तिता ।
 मेरु मध्ये स्थिता यातु सुषुमा बहुरूषिणी ॥ ५
 विसर्गाद्विन्दु पर्यग्न्तं वग्रास तिष्ठति तत्त्वतः ।
 मूलाधारे त्रिकोणाद्वय इच्छा ज्ञान क्रियात्मके ॥ ६
 मध्ये स्यम्भु लिङ्गं कं कोटि सूर्यग्र सम प्रभम् ।
 तदुद्धे काम वीजन्तु कला शान्तीन्दु नायकम् ॥ ७
 तदुद्धे तु शिखाकारा कुरडली ब्रह्म विग्रहा ।
 तद्वाहेऽहम् वर्णाभिं च स वर्णं चतुर्दलम् ॥ ८
 द्रुत हेम सम प्रख्यं पद्मं तत्र विभावयेत् ।
 तदुद्धे ऽप्नि समप्रख्यं सदुगन्धं हीरक प्रभम् ॥ ९
 वादिलान्तार्णं षट् वर्णं सहितं वत् सप्तवकं ।
 स्वाधिष्ठानाख्या सदनं योगिनां हृदयङ्गकम् ॥ १०
 मूलाधार षट्कोनं मूलाधार प्रकीर्तितम् ।
 स्वशब्देन परं लिङ्गं स्वाधिष्ठान सलिङ्गकम् ॥ ११
 तदुद्धे नाभि देशेतु मणिपुरं महाप्रभम् ।
 मैथ्याभं विदुग्राभं च बहु तेजोमयं ततः ॥ १२
 दशभिश्वदलैयुक्तं जदि फान्तान्तरान्वितम् ।
 शिवेनाधिष्ठितं पद्मं विश्वालोकन कारकम् ॥ १३
 मणिमद् भिन्नं तत्पद्मं मणिपुरं शशि प्रभम् ।
 कथितं सकलं नाथ हृदयात् शृणु प्रिय ॥ १४
 तदुद्धे ऽनाहतं पद्मं हृदिस्थं विकुलाकुलम् ।
 उद्यादादित्य संङ्काशं कादि ठारडान्तरान्वितम् ॥ १५
 दल द्वादश संयुक्तमीश्वराद्य समन्वितम् ।
 तन्मध्ये वाणिलिङ्गं तु सूर्यग्रयुत सम प्रभम् ॥ १६
 शब्द ब्रह्ममयं वक्ष्ये ऽनाहतस्तत्र दूशपते ।
 तेनाऽनाहत पचाख्या योगिनां योग साधनम् ॥ १७
 आनन्द सदनं तत्त्वं सिद्धेनाधिष्ठितं परम् ।
 तदुद्धे त्वं विश्वस्त्रव्यं दक्ष षोडश पंकजम् ॥ १८
 वर्णं षोडशभिर्यूकं धूप्रवणं महाप्रभम् ।
 योगिनामस्तुत स्थानं सिद्धिर्कां स्थानभगवत् ॥ १९

विशुद्धं तनुते यस्मात् जीवस्य हंसलोकना॑ ।
 विशुद्धं पद्माखण्डमाकाशाखण्डं महतप्रभम् ॥२०
 आङ्गाचकं तदूद्धै॒ ति अर्थिनाऽधिष्ठितं परम् ।
 आङ्गा संक्रमण तत्र गुरोराङ्गेति कीर्त्तिम् ॥२१
 कैलाशाखण्डं तदूद्धै॒ तु तदूद्धै॒ रोधनं ततः ।
 एवं विद्यानि चक्रानि कथितानि तत्र प्रभो ॥२२
 तदूद्धै॒ स न ममलं सहस्राम्बुजं परम् ।
 विन्दु स्थानं परं ज्ञेयं गणाणां मत मा शृणु ॥२३

This description tallies generally with other descriptions but have some special features. It begins by stating that this body of ours is an epitome of the world at large. The 5 Bhutas—Akash, Marut, Teja, Apa, and Prithwi and the energy in the form of the Sun and the Moon in this world are all present in this micro-cosmos. There are nearly 30 million nadis, nerves, in this body ; of these only 14 are important. Three out of these fourteen are most important ; their names are Ida on the left, Pingala on the right and the Sushumna in the centre. These are located within the Meru. The word Moolam-Adhar in Sl. 11 quoted above, means Adhar, base, of the Moolam, root. This in short is called the Mooladhar. There is a triangle in the Mooladhar and a Linga, phallus, is found in the triangle. This Mooladhar looks like a sat-kona, a six cornered figure. There are two chakras here ; one is the Mooladhar chakra with 4 petals, and the other is the 6 petalled chakra Swadhisthan. Above these are the Manipur, Anahata, Vishudha, and the Ajnya as per general description. Above the Ajnya chakra is a place called Kailash, and above that is Rodhini. The space above that is called the Sahasrar and within this is the Vindusthan which may be looked upon as the seat of the root energy, call it by any name.

In 60th chapter of Rudra-yamal sl. 30 to 35 there are to be found the description of some parts beyond the Rodhini above mentioned.

द्विदल भेद माकृत्य रोधिणी चक्र माश्रयेत् ।
 ततः कटाह माभेद्य पूर्णं शेलं समाश्रयेत् ॥
 ततोऽसौदुग्रमणिं मित्वा घटाधारे मनोलयं ।
 तदूद्धैँ प्रलयाकारं ब्रह्मचक्रं निराकुलम् ॥
 तदूद्धैँ ब्रह्मदण्डन्तु तदूद्धैँ केवलम जलम ।
 सर्वं जलं समालक्ष्य सहस्रारं प्रभामयम् ॥
 तदूद्धैँ कर्णिका स्थानं सिद्ध खडग तदूद्धैँ के ।
 सर्वं वीजमयं नाथ मातृका मशडलं ततः ।
 मातृका मण्डलोद्धैँ च प्रेत वीजं सुधामयम् ।
 प्रेतासनोपरि धारयेत् महाकाल कुलश्वरीम् ॥
 ततैव श्रीपदाभ्योज तले संखापयेण मनः ।
 पूर्वोक्त देवताभिस्तुलययोगेन लेपयेत् ॥

After the 2 petalled Ajnya chakra is the Rodhini. From here, when he proceeds up by piercing the obstruction, he finds the immense Brahma chakra. Just above the Rodhini is the Brahma Danda and beyond it is an expanse of water. When one crosses this volume of water he reaches the Sahasrar. In the central part of this Sahasrar is a central triangle. Over it is the Sidha Kharga on which is located the Matrica Mandal. Beyond the Matrica is the Pretasana and one is to put the conception of the Mahakala and his supreme Energy on this Pretasana. One is to practice concentration at the lotus feet of this conception and as his concentration deepens these various aspects described above will disappear.

While commenting on the Bhabonopanishad, the great Acharya Bhaskar Rao has described the fourteen nadis round the Mooladhar as hinted in the above quotation from Rudrayamal. It runs thus :—

घूलाधारे तत्र मध्ये सुषुमा अलम्बु से उमे ।
 प्राक प्रत्यगमस्ति अन्यास्त्रिकोणाग्रात् प्रदक्षिणा ॥
 या लेखा सस्तिता नाभम् कुहुश्वैव तु वाह्णा ॥
 यशस्त्रिनी पिङ्गला च पुषा नाम्नी पयस्त्रिनी ॥

सरस्वती शङ्खिनी च गान्धारी तदनन्तरे ।
 इडा च हस्ति जिहा च ततो विश्वोदराभिधाः ॥
 रुद्र पायु ध्वजा शेषपश्चासा नेत्र कर्ण योः ।
 जिहा कर्णाद्विं नासाद्विं जठरान्ता चतुर्दशः ॥

The fourteen nadis have their origin round the triangle in Mooladhar. Their names and distribution are as follows :—

1. Sushumna—from the upper apex of the triangle, to Brahma-randhra.
2. Alambusha—from the lower apex of the triangle, to area of anus.
3. Kuhu—to area of penis.
4. Varuna—to the gums and teeth.
5. Yashaswini—to the tips of the toes.
6. Pingala—to the right nose.
7. Pusha—to the eyes.
8. Payashwini—to the ear.
9. Saraswati—to the tongue.
10. Shankhini—to the ear.
11. Gandhari—to the eye.
12. Ida—to the left nose.
13. Hastijeeva—to the face.
14. Vishwodara—to the end of Jathara, stomach.

This description of the nadis has been quoted from books of pre-Budhist period. We are again quoting from Shaktananda Tarangini, a book of post Buddhist period, not more than thousand years old. This will show that for want of practical study how imaginary descriptions have crept in.

इडा च वाम नासाया॑ दक्षिणे पिङ्गला मता ।
 सुषुम्ना ब्रह्मरन्ध्रे च गान्धारी वाम चक्षुसि ॥
 दक्षिणे हस्ति जिहा च पुषा कर्णे॒ य दक्षिणे ।
 वामे यशस्विनी खेया मुखे चालम्बुसा मता ॥
 कुहुश्च लिङ्गमुले स्यात् शङ्खिनी शिरसो परि ।
 एवं द्वारं समाश्रित्य तिष्ठन्ति दश नाडिका ॥

According to this description Ida goes to the left and Pingala to the right nose. Sushumna goes to the Brahma-randhra, Gandhari to the left eye, Hastijeevha to the right eye, Pusha to the right ear, Yashaswini to the left ear, Alambusa to the face, Kuhu to the root of penis and Shankhini to the top of the head. In this way the 10 nadis are located on the 10 doors of the body. We need not dilate on this. A comparison with pre-Buddhist description will speak for itself. In some of the texts certain measurements are given of the size of the Kanda. We find in the Shiva-samhita :—

गृह्णाद्वाङुलतश्चोर्ध्वं मैद्रैकाङुलस्त्वधः ।
एवं चास्ति समं कन्दं समता चतुरङुलम् ॥
पश्चिमाभिमुखी योनि गुद मैद्रान्तरालगा ।
तत्र कन्दं समाख्यगतं तत्रास्ति कुरुडली सदा ॥

Two fingers over the anus and one finger below the penis is the location of the Kanda, which is four fingers long. There is a Yoni, triangular space on its western face, and the Kundalini shakti is located there. In the Shree-Vidyarnava Tantra the measurements differ a little :—

गुदमैद्रान्तरे देवि पञ्चाङुल समुच्छितं ।
गुदमेकाङुल मध्ये द्वाङुल विसारणम् ॥
तस्य मुले महायोनि शिकोणाकार रूपिणी ।
सुषुम्ना योनि मध्यस्था तस्यामुले महेश्वरि ॥
अधः पश्चं सहस्रारं कर्णिका केशरान्वितं ।
तैजसं रक्तवद्वीपं तद्वलस्थित शक्तिभिः ॥

The Kanda is located between the anus and the root of the penis and is about 5 fingers long. It is within one finger of the anus and is about 2 fingers broad. In it there is a triangular space called the Maha-Yoni and the Kula-kundalini shakti is located here. Below this is the Lower Sahasrar which is full of energy.

So far we have quoted from various texts the points of difference in the descriptions of the various chakras. A

summary is now given bringing out the salient features which will help identification of the various chakras.

(1) The Sat-chakras are all located in the Linga sharir and not in the stool, gross, body.

(2) The base of the Moolam, root is a six-cornered space.

(3) In a line with the centre of the anus and the root of the penis i.e., perineum is a Kanda, tuber. This is about 4 fingers long and 2 fingers broad. This Kanda looks like a flower of Datura stamonium. On the west face of it is a triangle with apex downwards. In this triangular space is a phallus called Swayambhoo Linga. The Kula-kundalini shakti lies on the top of this phallus coiled like a snake. She is the causative energy of life and respiration.

(4) Just on the top of this Kanda is an organ called Kalpa-Yoni ; it looks like an egg of a bird. It is also about 4 fingers broad. On its western face is another triangle with its apex upwards. The base of this triangle overlaps the base of the first triangle mentioned on the west face of the Kanda. These two triangles, therefore, form a six cornered rhomboidal space which has been called the base of the Moolam. Some have located the Kula-kundalini shakti here.

(5) In a circle round the Kalpa-yoni the 14 nadis emerge ; of these Sushumna proceeds up and the Alambusha hang downwards. The rest are situated in a circle round this organ.

(6) The Mooladhar chakra is located in the substance of the Sushumna nadi at a level with the perineum and has 4 petals.

(7) The Swadhistan chakra is above the Mooladhar at a level with the root of the penis and has 6 petals.

(8) The Manipur chakra is above this and has got 10 petals : it is in a line with the umbilicus. Some have placed the Kundalini here.

(9) Above Manipur between it and the next higher chakra some have mentioned seats of 8 different types of energy. The root energy Kula-Kundalini is said to be divided into these 8 varieties.

(10) Above this is the fourth chakra Anahata in a line with the heart and has twelve petals. On its west face is another phallus called the Van-Linga.

(11) The fifth chakra is located above this and is called Vishudha chakra ; it has 16 petals and is in a line with the throat.

(12) The Ajnya chakra with 2 petals is located above the Vishudha in a line with the centre point of the brows.

(13) Above the Ajnya chakra certain other parts have been described. They are in the following order from the Ajnya chakra upwards—a space full of water, one full moon, one half moon the Brahma danda, the Rodhini, the innermost triangle, the Sidha-Kharga, the Pretasthan, and on the top is the Moola shakti kendra. Above it there is nothing i.e. it is the end.

(14) All these structures are floating in water called Karan-bari.

(15) Amrita or Nector is secreted by the Ardha Chandra and flows down. This is eaten up by the Sun which is said to be located in the Mooladhar while some place it in Manipur.

(16) According to Rudra Yamal there are eight Chakras below the Mooladhar extending from Anus to Throat and eight Chakras above the Mooladhar.

(17) According to Acharya Bhaskar Rao there are two Chakras below the Mooladhar and above the Lower Sahasrar.

(18) There are two Sahasrars one on the upper end of Susumna called Adhumukh Sahasrar and the other at the lower end of Susumna, called Urdhamukh Sahasrar. The Susumna Nadi is located between these two Shahastrar and the Sat-chakras are located in this Nadi.

(19) There is a passage in the centre of Susumna Nadi. It is called Brahma Randhra.

(20) There are four Hills named Kamrup Giri, Jalandhar Giri, Uddian Giri and the Purna Giri. Some have placed these in different Chakras while others have placed them all in Anahatha Chakra which is opposite to the heart.

These are in brief the salient features of the descriptions of the chakras which will help us in identifying them, Anatomically. Other points will be mentioned as they will crop up during the comparative study.

CHAPTER II

The sixteen Adhars, Three Lakshyas and Five Vyomas.

In the foregoing Chapter we have dealt in detail with the Chakras from various texts. As the Knowledge of Adhars etc., are also necessary for a student of Yoga, these are described now in brief.

16 Adhars.

In describing these all texts are unanimous, so it will do to quote from any text. The Yoga Swarodaya has been quoted in Prantoshini Tantra, and we are reproducing that.

षोडशाधार भेदन्तं श्रणु देवि विशेषतः ।
अद्युष्टं पादयोस्त्वेजः सलक्ष्य स्थिरं दृष्टिमान् ॥
पादद्युष्टे य आधारः प्रथमो योगतत्त्वतः ।
द्वितीयं पादमूलन्तु पादमूलं पुरःसरै ॥
तृतीयन्तु गुदाधारं गुदं संकोचनं क्रिया ।
विकाशाकुंचनस्त्वा स्थिरं वायौ च मृतुगजित् ॥
लिङ्गाधारं चतुर्थंन्तु लिङ्गं संकोचनन्तु च ।
लिङ्गं संकोचनाभागासात् पश्चिमादण्डं मध्यगगः ॥
बज्रं नाडीति तन्मवेगं पुनरभगसयन् तथा ।
सञ्चारो वायु मनसो रति सञ्चारो इति हिंदा ॥
वीयस्त्वम् भवेत्तेन साधयेत् सदा युवा ।
मूलाधारे ब्रह्मं पद्मे षट्पद्मे च यथा तथा ॥
प्रश्नित्वा विभेदस्तु तद्देवो ब्रह्मं मार्गतः ।
ब्रह्मपद्मे वायु पूर्णे भुत्वा तिष्ठति योगीराट् ॥
पञ्चमं जठराधारं तदा वन्ध्यति क्रमात् ।
मृतुगना भङ्गसिध्गोऽयं मृतुरेव ज्ञयंकरः ॥
नाभगाधरं भवेत षष्ठं स्त्र॒त्र प्राणं समभगसेत् ।
स्त्रयमुतपद्यते नादो नादो मुक्तिदस्ततः ॥
सप्तमो हृदयाधारं स्त्र॒त्र वायुं विवन्धनात् ।
ऊर्ध्वं धक्त ॥ नि पञ्चानि विकशन्ति महान् भरेत् ॥

कण्ठाधारोऽष्टमस्त्रं कण्ठ स कोव लक्षणः ।
 जालन्धराखणो वन्यः स्याक्स्मिन सति मेरुदूढ़ ॥
 नवमो घण्टिकाधार स्त्र जिह्वाग्रमश्चतः ।
 संपिवत्स्मृतं तस्माद् योगचिन् सृतुरजित् परः ॥
 दशमस्त्रालुकाधार स्त्र जिह्वाग्रतः कृते ।
 चलने दोहने चैव जिह्वा तालु विलम्बिता ॥
 नासिका प्राप्त जिह्वेयं तालु लक्षा भवेत्ततः ।
 एकादशो भवेत्जिह्वा तलजाधार ईश्वरी ॥
 जिह्वाग्र मथने स्त्रस्मिन पानीयं मधुरं भवेत् ।
 तत् पोतेषु कर्विगीति जगोतिश्कन्दो विदा' वर ॥
 द्वादशारो द्वादशेति सर्वं रोगक्षयं करः ।
 धारयेद्वादशोर्ध्वे । जिह्वाग्रं श्व वलादपि ॥
 धृताद्वं घटिका मात्रं सर्वं रोगान्तु नाशयेत् ।
 नासाधार स्त्रो झेय नासा लक्षणयोदशः ॥
 मनस्त्रिर करो यस्तु वायु स्त्रिर करो महान् ।
 नासापुर्वे स्थिरा द्वृष्टि राधारोयं चतुर्दशः ॥
 कृत्येस्मिन खीय तेजः स्यात् प्रत्यक्ष षट् त्रिमासतः ॥
 पार्थिवं त्रुटिति त्रिप्रं प्रत्यक्षं खीय तेजसा ॥
 पंचदश भूवोर्मध्ये स्थिर द्वृष्टि स्त्रथा ध्रुवम् ।
 अस्मिन द्वृष्टि स्थिरा कोटि किरणाणि स्फुरन्ति हि ॥
 नेत्राधार षोडशोऽयं मङ्गलग्रेण वालयेत् ।
 पृथ्वी मधेऽनु यत किंचित् वर्तते जठरानल ॥
 प्रत्यक्षं तद्वेदं सर्वं तदभासान्त्र संशय ।
 सर्वद्वाः प्रभवेत्तेन इति आधार षोडशः ॥

There are 16 Adhars or bases in this Sthula or Gross Body. The first one is the great toe of the foot. The second is the sole of the foot. The third is the Anus. One is to practice contraction and expansion of this organ. This will help his Vayus to be calm and may make him successful in defying death. The fourth base is the Penis. One is to try similar expansion and contraction here and along with it in

his scrotum also. The Nadi which comes out of the scrotum is called the Vajra Nadi. One is to practice the contraction and expansion in this Nadi also. This exercise consists of three parts.—1. Exercise of the Vayu. 2. Exercise of the mind and 3. Exercise during coitus. These three exercises are to be done in the same way in which one will do the exercises in his Mooladhar, Satchakras and Brahmapadma for piercing the three Granthis there. As a result of this exercise the discharge of semen will be delayed and, therefore, every youth is to practice this. The fifth Adhar is the Jotoradhar. This Adhar helps one to conquer death. The sixth Adhar is the Navi. This is the origin of Pran and Nada. The seventh Adhar is the Hridaya. If one holds Vayu here then all the Padmas will become Urdhamukha. The eighth Adhar is the Kanthya. The effort to hold Vayu here is called Jalandhar-bandha and this gives strength and hardness to the Meru. The ninth Adhar is the Ghantika Adhar. One is to try to keep the tip of the tongue here and then he will be able to drink nector always. The tenth Adhar is called Talukadhar. Talu means palate. One is to pull and massage the tongue constantly to increase its length. As a result of this exercise when the protruded tip of the tongue will be able to touch the tip of the nose then one will know that now his tongue when kept within the mouth will touch the whole length of the palate. The eleventh Adhar is the Tongue itself and is called Talajadhar. One is to always massage the tip of his tongue, this will give him a sweet taste whenever he drinks anything and such sweet sensation from drink will make him a poet and a singer, as well as one versed in Jyotish and Rhetoric. The twelfth Adhar is the seat of the Teeth and the Gums. If one practises holding the tip of the tongue always firmly between the teeth he will be free from all diseases. The thirteenth Adhar is the Nose. If one holds the Vayu here then this will give calmness of mind and Vayu. The fourteenth Adhar is the Nasal cavity. If one fixes his attention here then within 3 to 6 months he will be able to see his own Teja or rays of energy emanating

from his own body. The fifteenth Adhar is the centre of Brows, and exercise of this place produces innumerable wonderful rays. The last 16th Adhar is the Eye. One is to move the eye-balls daily with the tip of his fingers. This will enable him to see every energy that exists in this world and as a result he becomes Sarvagnya, omniscient.

This almost literal translation of the bases will appear like meaningless riddle. One will only remember the 16 names of these Adhars. What to do, what exercises to be performed in these places will be described later on in other books of this series, when explanation of Yoga practices will be taken up. Effects of various exercises that are to be done in these places have been mentioned very briefly here. These will also be elaborated and physiologically supported later. There is one important item to be noted here which will help us in identifying the Muladhar and other chakras. These Adhars are description of the gross body and therefore Guhya, Linga, Navi, Hridaya, Kantha etc. places are named as bases and not chakras. Had the chakras been here then they would have been identical with the Adhars and no separate description would have been necessary. On the other hand while describing the Lingadhar here reference to Mooladhar and other chakras are to be noted. That these Adhars in these places of the gross body are separate from the Mooladhar and other Chakras is clear from the words यथा तथा which means in the same way as one will do in the chakras. This clearly acts as a pointer to place the chakras somewhere else other than in this gross body. Where are they to be placed if not in the gross body ? Certainly in the Linga Sharir as has been clearly remarked by Acharya Bhaskar Rao.

3 Lakshyas

There is some confusion about these. The Yoga Swarodaya mentions once these numbers to be 3 and again in another place the number is said to be 2.

नव चक्रं कलाधारं विलक्ष्णं वरोम पञ्चकम् ।

खदेहे यो न जानाति स योगी नामधारकः ॥

Again—

नव चक्रं कलाधारं द्विलक्ष्या वरोम पञ्चकम्
समग्रं यो न जानाति स योगी नामधारकः ॥

There may be two explanations for this. 1. It may be a printing mistake, but in that case what reading is correct ? 3 or 2 ? Secondly there may be some mis-reading. This idea is supported by a reading of Goraksha Sanhita.

षट्चक्रं बोङ्डशाधारं तिलकं वरोम पञ्चकम् ।
खदेहे येन जानान्ति कथं सिद्धन्ति योगिनः ॥

Here the reading is Tilok and not Trilakshya. The word Lakshya means aim and the word Tilak means the special marks one is to put on his own forehead after bath. These Tilaks vary according to the name and nature of the Deity one worships. From a close study it appears that the first reading of Yoga Swarodaya will be 3 Lakshyas and the second reading Tilaka. This gives us two different things. Tilaka and 3 Lakshyas. These will be described by us in detail with their significances when we shall deal with the preliminaries of Yoga practice in Book II as well as when dealing with Laya Yoga in Book IV of this series.

Vyom Panchak.

This term is the collective name of the 5 Tattwas according to the Bharatiya conception. Their names are, 1. Vyom, 2. Marut, 3. Teja, 4. Apa and 5. Kshiti. These have been very loosely translated into English by the words, 1. Sky, 2. Air, 3 Fire, 4. Water, and 5. Earth. This loose translation has caused a lot of misunderstanding of the whole Bharatiya conception of creation, and many eminent western writers have passed uncharitable remarks against the intellect of the great Rishis. Of course, the translation is correct literally but as we have already mentioned, the Sanskrit is a very flexible language and one word has many different meanings and unless one is acquainted with all the meanings and he chooses the appropriate word with reference to the context his

translation is bound to be misleading. A search in the Shastras reveals that the word Kshiti means धृति काण्डिन्यादि गुणयुक्ते ज्ञिति। It means whatsoever is hard and has the power of closely holding together its shape is to be known by the word Kshiti. Similarly द्रवत्वे अप्मसि whatsoever is liquid is called Apa. These prove that the translation given before is wrong and does not carry the true meaning of the terms with reference to the context. Before giving the proper translation we will give the theory of creation as described by the Rishis and then will compare that with our modern knowledge and this will help us to properly translate the terms. It is further hoped that this will clear up a lot of ambiguity and misconception of the Bharatiya Darshans, Upanishads and other branches of learning.

According to Sruti in the beginning there is only one absolute who is beyond the scope of word, mind and intellect ;—

अबाङ मनस गोचर । वाचा यत्र निवर्त्तन्ते मनसा बुद्धि ना सह ॥

This may be anything quite unlike all our known idea and so we cannot describe what it is. For some reason which we do not know and as such we may call it His whim or play लीला that one wishes to appear as many as mentioned in the Sruti एकोऽहं बहुस्थाम् I am alone, let me be many, स अकामयत । He wished it ; and so on. The Bible also describes the beginning in similar words, there was darkness and God said "Let there be Light and there was Light etc". So it is clear that no religion or philosophy has yet been able to determine why that supreme one, who is beyond all conception of our mind and intellect, wished the creation. Vedanta holds that all these visible world which we can grasp with our intellect are false and non-existing and there is nothing but the great One. There is no time, no space and no energy. Only the great One is ever existing and will ever exist. All this world with all factors are non-existent and is a false conception of our mind. It is very hard to realise this description of

Vedanta though it is the absolute Truth. To prepare oneself so that one will be fit to realise this, Sadhana, practice, is required and the methods of this Sadhana are described in various texts. To help a student to realise this Vedantic Truth the Sakta Darshan teaches that there is no difference between manifested energy and the owner of that energy. It is like the burning power of the Fire and the fire itself. Just as this a non-separable idea so the power of that great One and the One itself are inseparable. When the power is not being exposed the great One is alone and when his power emerges from him the power is called the "second" as distinct from the one. Your power of speech is in you ; so long as you do not speak it is dormant in you and you are said to be alone.

But when you speak the power appears as a separate entity from yourself. In this way for preparing ones mind the Sakta Darshan has introduced duality. The Sankhya Darshan of Kapila is the oldest of the Darshans. In it also these two aspects are accepted. The energy aspect is called Prakriti and the great one is called Purusha. The Purusha has been described as inert and inactive, whereas, the Prakriti is the Kinetic or the Dynamic side doing everything. Therefore, Sankhya teaches that there are innumerable small parts of Prakriti which keeping a small part of the Purusha in the centre, herself is moving constantly round it. The combination of these units of Prakriti and Purusha is called Vyomo, Akasha, etc, which is the first Tattwa. From a collection of such, the second Tattwa Maruta is formed. The total number of Maruta so formed is 49. By a permutation and combination of these Marutas innumerable Tejos, the third Tattwa is formed, and from the Teja the Apa emanates and from Apa comes the Kshiti. This is the process of creation from the great One to the many. In its opposite process that of Laya, destruction, the order is reversed, i.e. Kshiti is lost in Apa, Apa in Teja, Teja in Vayu, Vayu in Akash and Akash in Prakriti. Finally the Prakriti enters the Purusha where the dynamic manifestation

is converted into potential form and then there the great unthinkable, unspeakable One remains alone.

The above description is culled from various Tantras and other texts like Sarada-Tilak, Raghava Bhatta, Proyag-sar, Kriya-sar, Brahmagan Tantra, Nirvan Tantra, as well as Sruti. We quote some :—

सारदा तिलकः—सच्चिदानन्द विभवात् सकलात् परमेश्वरात् ।

आसीच्छकि स्तोनादो नादाच्छ्रुष्टि समुद्भव ॥

श्रुति—तस्मात् ब्रह्मण आकाशः समुत्त आकाशद्वायुक्तं योस्तेजः

स्तेजः आपोऽद्भूतः पृथिवी पृथिवा ओषधय च इत्यादि

The word Nada in the above quotation from Sarada Tilak, means sound. Sound has been called Guna, quality, of Vyom. So when it is stated that sound is produced from sakti, it is to be understood that vyom-tattwa is produced from the sakti.

Therefore, in that great One, we can discern two different types of energy, one is the productive, which produces the world at his will and is called Pravritti sakti and the other is the destructive which resolves the world and is called Nivritti sakti. The whole creation or expansion of this world from the great one is the result of its Pravritti sakti and under Nivritti sakti the universe gradually disappears till the sakti itself unites with the great One and only the One remains. When a man, as per rules of practice, sets down in Yoga and Tantras, and work out the full Nivritti sakti and can finally by uniting her to the great One become one, then and then only he realises the teachings of Vedanta and can feel that this whole universe is false and there is nothing except the great One which may be called by any name, Atma, Brahman, etc. It is therefore, apparent that there is no quarrel with the Vedanta and all the texts have given direction for achieving the aim of Vedanta.

Let us now turn to our modern science and see how far it leads on. This universe is existing mainly in three forms,

solid, liquid, or gas. All the innumerable substances exist in any one or a mixtures of these 3 forms. The smallest part of these is called a molecule. The difference in the quality of these three forms are due to the size of inter-molecular space. In solid form this space is at a minimum and the molecules are packed together, so it is hard and has the property of folding together and maintaining shape. In liquid form the inter-molecular space increases and as a result there is no fixed shape and the power of flowing from higher to lower level was appeared. In gaseous form the inter-molecular space is at its maximum and as a result the substance has become fluid. It can expand and fill in a space and can exert pressure on all sides. To test if these molecules are really the undivisible entity we take a molecule and try to split it. It is broken up into atoms. One peculiarity is however noticed in this atomic condition. The molecule may be had from any of the innumerable substance but when broken into atoms we get only a measurable number of substance, say, 100. The immense varieties of substance in this universe dwindle down to about 100 substances called elements. By the permutation and combination of these 100 elements we get the infinite number of substances. It was supposed that atoms were undivisible, but recent advances, of knowledge has shown that the atoms are broken into electrons. The conception of electron is that there is a central positive charge called proton round which a negative charge of electricity called neutron is moving round in a circle. Another astonishing fact has been noticed here. Just as the infinite varieties of substances dwindle into 100 elements in the atomic form, the 100 elements dwindle into one in the electronic form and when thus all the elements have lost their identity and we get only one form of electron from all the different elements. The electronic form has become an enigma to the scientists, in this form matter exists though in an infinitesimal quantity, but in the proton and neutron form, matter altogether disappears and nothing but energy remains. There is no answer to the

question why the Proton and the Neutron, which are electric charges of opposite nature do not units and neutralise each other as generally is the case when two such electric charges are brought close together. Normally when two different electric charges are brought close together there is a flash with bluish light and we say that the energy has dissipated itself in other forms, because energy is indestructible. What is then the true sense of the expression—neutralisation? We can have some conception of it but we have no words to make it clear and expressive. What then are these two charges? Whence they came? Why are they separated? Why they are not uniting though so close together? These questions are still a moot point with modern science.

Let us now compare this modern knowledge with the description of the Rishis written before. There is the great One whence the energy appeared called Prakriti and which covered the great One, keeping it in the centre. The Prakriti and Purushana—infinite in number—is the beginning of creation and Vyom tatwa whose guha, quality, is sound was formed. This description tallies with the Proton in the centre. Neutron or energy moving round the Proton and the joint form of electron. Here we can accept the Poorush of Sankhya to be the Proton, Prakriti to be the Neutron, and the joint form of Vyom to be the electron. The moot questions raised in connection with neutron and proton, holds good in the case of Prakriti and Purusha, and the answer to all these question has been called Lila, play as mentioned before. In the electronic form there is motion the neutron is moving round the proton add motion produces vibration. Here the conception of time is introduced and we get so many vibrations per second. Before this there was no need for time. Neutron or proton individually being energy there was no conception of space, but as soon as the conception of electron is formed, idea of space comes in as matter is formed though, it may be in infinitesimal quantity. Thus the three conceptions of creation. Time, Space and Energy manifest themselves as soon

as due to some unknown cause the positive and negative phases of energy separates i.e. potential is converted into kinetic manifestation.

Combined with time the vibrations divide the energy into 5 parts according to our senses of observation. These 5 senses are 1. hearing 2, Touch, 3. Sight, 4. Taste and 5. Smell. When the vibrations are very slow we have no senses to catch them but when it reaches a frequency of about 270 vibrations per second we catch it as sound. The frequency gradually increases and leads us on through the range of the seven tunes. When the frequency passes this limit our this organ fails and we cannot hear any more. But then the second sense organ of touch comes to our help and we can catch the vibrations as heat. Thus in the electronic form when the vibrations are first produced due to the motion of neutron round the proton, sound is the form of energy present there, so the quality or guna of electron, Vyom is sound. As the atoms of the elements and the infinite variety of molecules are all formed from electron. Vyom, we may state that the whole universe is emerging from the sound. This is meant when the Rishis say "Shavda-Brahma", and that this universe originates from Shavda. After nothing and identifying Vyom with electron the other forms are easily identified. Without going to the details a list is attached which will speak for itself.

1. Proton—Purushamsa.
2. Neutron—Prakriti.
3. Electronic form—Vyom tattwa.
4. Atomic form—Maruta tattwa.
5. Gaseous form—Teja tattwa.
6. Liquid form—Apa tattwa.
7. Solid form—Kshiti tattwa.

This proves how fallacious it was to have translated Kshiti as earth Apa as water etc. The Rishis have every where used the word tatwa for the form of existense of matter, which is also called Bhoota, as per the above list. Solid, liquid, gaseous, atomic and electronic, these are the 5 forms

in which every thing in this universe exists ; no sixth form of existence is known to the modern scientists yet, and the Rishis have also stated that the universe is built of these 5 Bhootas or tattwas.

Some commentators have interpreted Vyom Panchak in another way. They hold that there 5 Vyomas-empty spaces within our human Body, and a Student of Yoga is to know these like the chakras and adhars etc. Modern anatomy also teaches us that there 5 such places in our body viz. 1. The peritoneal space, between the parietal and the Visceral layers of the peritoneum. 2. The pericardial cavity. 3. The pleural cavity. 4. The Subdural Cavity and 5. The Cairun Septum pellaciden Use of this knowledge of the Vyom Panchaks will be described later in other Books of the Series in due course.

A student who wants to take up the practice of Yoga, must be fully acquainted with this theory of creation. Our human body is composed of these five forms of matter just as the universe, so there is no difference of composition, so far as the form, of existence of the substances are concerned, between the Micro-cosmos and the Macro-cosmos. The Rishis have therefore held that a careful study of ones own body will reveal to him all the secrets of the universe.

We have so far described the preliminary essentials viz. the Sat-chakras, the 16 Adhars, the three Lakshyas and the Vyom panchak in the terms of the Rishis. We will now try to locate and identify them in our body with the help of our modern Anatomy and Physiology. This will require a short refresher course on modern Anatomy and Physiology which will be of help to all in following the comparison.

CHAPTER III

A Reference course of Anatomy & Physiology

The body of all animals and vegetables is composed of innumerable cells. A cell consists of a viscid, unstable, semifluid substance named protoplasm. This is a highly complex material of colloidal nature, which consists of water and the following substances in solution ; viz. protein, fatty bodies, carbohydrates, inorganic and organic salts. In size the cells are microscopic and cannot be seen with naked eye. Under a high power of a microscope the protoplasm of a cell may appear homogeneous or may show some degree of differentiation into fibrils, granules etc. within the body of the cell. On the outer surface is a very thin membrane called cell wall, and within it the protoplasm. Within the body of each cell there is usually a small globular more solid portion called the nucleus. More detailed knowledge of the cell is not necessary for our purpose. The cells have power of dividing and as a result 2 cells are formed from one. Each of these daughter cells is an exact prototype of the mother cell and has similar power of division. In lower animal and vegetable life the whole body of the organism may consist of a single cell, as in amoeba. In them reproduction is very simple. The mother cell divides itself into two and thus two separate organisms are formed. Thus the whole animal body takes part in reproduction.

In higher animals, who are multicellular, reproduction is carried on by certain group of cells specialised for this purpose. In females such specialised cells are located in a gland called ovary and in males in another gland called testes. These glands secrete and the secretions contain in females "Ova" and in males "Spermatozoa" the respective specialised cells of reproduction. One single mature ova is fertilised by a male spermatozoa and after fertilisation the ova and the spermatozoa fuse together, loose their separate identity and is converted into

a new cell called fertilised ova. This new cell is the begining point of the new animal.

The fertilised ova divides into 2, 4, 8, 16, and so on parts, which become independant cells, and in this way an innumerable number of cells are formed ; these cells arrange themselves in many ways to form the various parts of the body of the animal, and also in many forms for taking up different works in the body. Thus a differentiation of the cells take place based on work and the nature of the body formed. As development proceeds groups of cells are differentiated and four basic tissues are formed :—1. Epithelial tissue, 2. Connective tissue, 3. Muscular tissue, and 4. Nervous tissue. Each of these tissues possesses certain distinguishing features and with the exception of nervous tissue, each is divided into a number of varieties which retain the essential characters of the parent tissue but show specialisation of one or more of its characters. These tissues are built up together in varying proportions to form the organs of body.

A short description of these tissues :—1. Epithelial Tissue—All the surfaces of the body—the external surfaces of the skin, the internal surfaces of the digestive, respiratory, urinary and the generative tracts ; the closed serous cavities, the inner coats of the vessels, the acni and ducts of all the secreting and excreting glands, the ventricles of the brain and the central canal of the spinal medula—are covered by one or more lairs of cells called epithelium. These calls serve various purposes and their shape and size differ according to the location and purpose served. Thus in skin the main purpose served by epithelium is that of protection, the epithelial cells of the salivary glands the pancreas, the ga^tic glands, the glands, of the small intestine prepare the digestive juices ; those covering the intestinal villi are concerned with absorption of the products of digestion ; those lining the serous cavities provide a smooth moist surface. It should be noted and remembered that blood vessels are absent from all epithelia.

2. The connective Tissue ; It has a passive function, of

binding together and supporting the functionary, active structure. It is divided into many forms, viz., Fat, Cartilage, Bone and blood ; all these are different forms of connective tissues. 3. The Muscle tissue :—This tissue is composed of bundles of reddish fibres endowed with the property of contractility. There are three varieties, (a) striped or voluntary (b) Unstriped or in-voluntary and (c) branched or cardiac. The muscle tissue is a variety of specialised cell and as such has lost its power of reproduction. 4. Nervous tissue ;—It is specialised for the inauguration, propagation and reception of nerve impulses and being highly specialised it has lost its power of reproduction. The nervous tissues of the body comprise of the brain, the medula spinalis or the spinal cord, the cerebral, the spinal and the sympathetic nerves and the ganglia connected with them. The nervous tissue is composed of the nerve cell and its various processes called fibre. To the naked eye the nerve cells appear grey and the fibres white, hence the cell collections or lairs is called grey substance and the fibrous lair is called the white substance of the nervous system. We have seen that a single cell, the fertilised ova grows by dividing into innumerable cells and these are formed into four groups according to the function and site of the organ. How this development takes place is described in Embryology, a section of Anatomy. We need not go into full details of development of various organs, but we shall summarise very briefly the development of the nervous system, as this knowledge will be required for a proper understanding of the Yogic processes.

The cells that will grow into the nervous system arrange themselves as a tube on the body of the growing foetus and is called neural tube. The front part of this tube develops into brain and the hind part into the spinal medulla, the spinal nerves and the autonomous nervous system. The portion which is to develop as brain shows three constrictions and gets bent on itself. The foremost part of this bent portion grows into cerebrum, just behind this is the first constriction ; then comes the second part called the mid-brain, this is the

smallest segment ; behind it is the second constriction. The last part is the hind brain from which develops the Pons, cerebellum and the medula oblangata. Then comes the third constriction and bend which separates the medula oblangata from the spinal medula or the spinal cord.

The nervous system is the mechanism by which all, save the lowest form animal life are enabled to react to their environment. In addition, the nervous system controls and regulates the activities of all the other systems of the body and determines their harmonious co-operation for the benefit of the organism as a whole.

Evolution.

The irritability inherent in living protoplasm obviates the necessity for an elaborate mechanism in such simple forms as Amoeba and is responsible for the way in which the animal responds to stimulation. When a mechanical stimulation is applied to an Amaeba it throws out pseudopodia on the side removed from the stimulus and retreats in that direction. Such a reaction will be of little value to a multi-cellular organism, and the first step towards the evolution of the nervous system is the development of a contractile tissue skin to plain muscle. In addition to this a mechanism must be developed for the reception of stimuli, the receptor apparatus and for their transmission to the whole effector apparatus before generalised movements can become possible. This is the beginning of the nervous system.

BRIEF SUMMARY OF THE CENTRAL NERVOUS SYSTEM.

As already mentioned the central nervous system includes spinal medula or spinal cord, the medula oblangata, the pons, the cerebellum the mid brain and the cerebrum.

THE SPINAL MEDULLA OR SPINAL CORD.

It is the elongated nearly cylindrical part of the C. N. S. which occupies the upper two-thirds of the vertebral canal. It extends from the level of the upper border of the first cervical vertebrae to that of the lower border of the first lumbar

vartebrae. Above it is continuous with the brain below it tapers off in a conical extremity termed the conus medullaris, from the apex of which a delicate non-nervous filament named the fibrum terminale descends as far as the first segment of the coccyx.

The brain and the spinal medulla are ensheathed by three protective membranes separated from each other by spaces. They are from out inwards :—1. The Durameter, 2. The Subdural space, 3. The Arachnoid, 4. The Sub-arachnoid space and 5. The piamenter which is closely attached to the surface of the brain and spinal medulla and follows all the depressions and the sulci.

Thirtyone pairs of spinal nerves spring from the spinal medulla each nerve having an anterior and a posterior route, the latter having a ganglia attached to it. The pairs of spinal nerves are grouped as follows :—Cervical—8, Thoracic—12, Lumbar—5, Sacral—5 and Coccygeal—1.

On a transverse section of the cord the grey matter is found situated centrally. It consists of right and left symmetrical portions connected by a transverse conniseure of grey substance, the whole bearing a resemblance to the latter H. The transverse band of grey substance is traversed by a central canal which is just visible to the naked eye.

2. The Hind Brain.

It consists of medulla oblangata, pons, the cerebellum and the fourth ventricle. The hind brain owes its importance to 1. Its control over the heart and the respiratory apparatus, 2. Its control over the elementary tract and its derivatives, 3. Its acquisition of the sense of hearing and of the power of phonation and 4. Its synergic control over the musculature of the body. Thus it controls the true animal life but has no control over the intellect or the higher psychic life. There are eight groups of grey matter Nuclei which exert the following controls :—

1. Nuclei controlling otic vesicles.

2. Special visceral afferent nuclei—taste-buds.
3. General somatic afferent nuclei—skin.
4. General visceral afferent nuclei—viscera.
5. General visceral efferent nuclei—viscera.
6. Brachial efferent nuclei—lungs.
7. Cardiac nuclei—heart.
8. Somatic efferent nuclei—muscles.

A. The Medulla Oblangata.

It extends from the lower margin of the pons to a transverse plane passing above the first pair of cervical nerves, this plane corresponds with the upper border of the first cervical vertebrae. It is somewhat pisiform in shape, its broad extremity being directed towards the pons while its narrow lower end is continuous with the spinal medulla. The central canal of the spinal cord is prolonged into its lower half and then opens into the cavity of the fourth ventricle. No grey matter is visible on the surface of the medulla oblangata. The whole of it being placed inside the substance as in the spinal cord. Internally it contains the following nuclei of grey substances : - 1. Nucleus gracilis, 2. Nucleus cuneatus, 3. Nucleus of the spinal tract of the trigeminal nerve, 4. Nucleus of the hypoglossal nerve, 5. Dorsal nucleus of the Vagus, 6. Nucleus of the tractus solitarius, 7. The formatio-reticularis, 8. The inferior olfactory nucleus, 9. The medial accessory olfactory nucleus, 10. The Dorsal accessory olfactory nucleus. 11. Arcuate nuclei, 12. Nucleus ambiguus, 13. Nucleus of the Cerebral part of the accessory nerve, 14. Nucleus of the vestibular nerve, 15. Inferior nucleus of the vestibular nerve, 16. Nucleus inter-calatus, 17. Nucleus of roller, 18. Inferior salivatory nucleus. Of these the nucleus of roller is believed to function as a respiratory centre..

B. The Pons.

It is situated in front of Cerebellum. From its upper part the cerebral peduncles emerge on each side of the middle line. Behind and below the Pons is continuous with

the medulla oblongata but is separated from it in front and laterally by a transverse furrow in which the abducent, facial, and acoustic nerves appear. The anterior surface of the pons is prominent being markedly convex from side to side, less so from above downwards. It consists of transverse fibres arched like a bridge across the middle line and gathered on each side into a compact mass which forms the middle cerebellar peduncle. The dorsal or posterior surface of the pons triangular in shape, is hidden by the cerebellum and is bounded laterally by the superior cerebellar peduncles. It forms the upper part of the Rhomboid Fossa of the fourth ventricle.

Like medulla oblongata no grey substance is visible on the outer surface of the pons. Nuclei of grey matter within the substance of the pons are :—1. The nuclei pontis, 2. The lateral vestibular nucleus of Deiters, 3. The superior vestibular nucleus of Bechterew. 4. The ventral cochlear nucleus, 5. Nucleus of the corpus trapezoidum, 6. The dorsal cochlear nucleus, 7. The superior olive, 8. Nucleus of the abducent nerve, 9. Facial nucleus, 10. Motor nucleus of the trigeminal nerve, 11. Superior sensory nucleus of the trigeminal nerve, 12. Nucleus of the lateral lemniscus.

C. The Cerebellum.

It is the largest part of the hind brain and lies behind the pons and the medulla oblongata. Between its median portion and these structures is the cavity of the fourth ventricle. It is somewhat ovoid in form but constricted, its median part and flattened from above downwards. Its surface is not convoluted like the cerebrum but is traversed by numerous curved furrows, which vary in depth at different parts and separate its constituent laminae. It consists of a narrow median strip called the Vermis and two cerebellar hemispheres. The grey and white substances of which it is comprised are arranged in precisely an opposite manner to that of spinal

medulla etc. The grey substance is found covering the whole surface of the cerebellum and dipping in, to line the various fissures which cross its surface. The white substance forms a central core which is much thicker in the lateral parts than it is in the median area. The white substance consists of, 1. Fibre propre, these do not leave the cerebellum but connect different cortical areas with one another. 2. The projection fibres, these connect the cerebellum with other parts of the brain. Most of these fibres escape in an upward direction from the substance of the cerebellum. The grey substance ;—It is found in two situations, 1. On the surface forming the cortex, 2. As independent masses in the interior. These second consists of four nuclei ;—1, Nucleus dentatus. 2. Nucleus embeliformis, 3. Nucleus globosus, 4. Nucleus Fastigii. Fibres from all these grey substances pass in an upward direction.

D. The fourth ventricle.

The fourth ventricle is a somewhat logenge shaped space situated in front of the cerebellum and behind the pons and upper half of medulla oblongata. It is lined with ciliated epithelium and its inferior angle is continuous with the central canal of the medulla oblongata, its superior angle is continuous with the cerebral aqueduct. It has a roof, a floor, and lateral walls. In the roof there are three openings, the cerebro-spinal fluid which is secreted by the choroid plexuses escapes out of the ventricular space into the sub arachnoid space.

The floor :—It is rhomboidal in shape, and is covered by a lair of grey substance continuous with that surrounding the central canal of the medulla oblongata ; superficial to this is a lair of ciliated epithelium. It consists of three parts, superior, intermediate and inferior. The superior part is triangular in shape with apex directed upwards, the inferior part is also triangular with apex directed downwards, the intermediate space is enclosed between the bases of these two triangles.

This brief description of the hind brain will serve our purpose. It is to be noted that the nerve cells or the grey substance forms a total of 34 nuclei in hind brain ; 18 in medulla oblongata, 12 in pons, and 4 in cerebellum.

3. The Mid-brain.

This is the shortest of the three primary portions of the brain. It controls the higher visual and higher auditory centres. It connects below with the pons and above with the subthelamic region of the cerebrum. It consists of a ventral and a dorsal portion separated from one another in its interior by the central aqueduct which represents the lumen of the primitive neural tube. The ventral portion comprises of two cerebral peduncles. The dorsal portion consists of the corpora quadre-gemina. Like the medulla oblongata and the pons the grey substance is located in isolated groups in the substance of the midbrain. There is no grey substance on the surface ; there are twelve such collections of grey substance :—1. Substantia Niagra. 2. Nucleus of the trochlear nerve. 3. Mesencephalic nucleus of the trigeminal nerve. 4. Dorsilateral nucleus of the oculomotor nerve. 5. Ventri-medial Dorsilateral nucleus of the oculomotor nerve. 6. The central Dorsilateral nucleus of the oculomotor nerve. 7. Edigner westphal Dorsilateral nucleus of the oculomotor nerve. 8. Caudal central Dorsilateral nucleus of the oculomotor nerve. 9. Nucleus of Darkschewitsch. 10. The red nucleus. 11. The inferior collicular nucleus. 12. Superior collicular nucleus.

4. The Fore-brain.

It consists of 1. The diencephalon—corresponding in a large measure to the third ventricle and the structures which bound it and 2. The telencephalon—comprising the largest part of the brain, viz., the cerebral hemispheres ; these hemispheres are connected with each other across the middle line and each contains an extensive cavity named the lateral

ventricles; The lateral ventricles communicate with each other and with the third ventricle through the inter-ventricular foramen and are separated from each other over a wide area only by a medium septum termed the septum pellucidum. This contains a slit like cavity called cavum septum pellucidum, which does not communicate with the ventricles.

The grey substance in the forebrain is mainly distributed on the surface of the cerebrum, dipping and following all the convolutions as well as within the cerebrum. The discreet collections of grey substance of the cerebrum are :—

1. Nucleus in the sub-thalamic region.
2. Massa intermedia.
3. The Anterior thalamic nuclei.
4. Medial thalamic nuclei.
5. Lateral thalamic nuclei.
6. Interstitial nucleus.
7. Medial geniculate body.
8. Lateral geniculate body.
9. Habenular ganglion.
10. Nucleus of Luy's.
11. Posterior perforated substance.
12. Interpeduncular ganglion.
13. Medial corpora mammillaria.
14. Lateral corpora mammillaria.
15. Caudate nucleus,
16. Lentiform nucleus.
17. Amygdaloid nucleus.
18. Claustrum.

The thalamus is the most important of the subcortical corelation centres. Into it stream impulses from the olfactory apparatus, the visual apparatus, the somatic receptors of all kinds and the splanchnic receptors. In the thalamus these impulses are co-related with one another before they are transmitted to the cerebral cortex, but the co-relation which occurs in the thalamus is something more than the simple interaction of nervous impulses, for there is good ground for supposing that the activities of the thalamus enter into and are appreciated by consciousness. It is certain that the higher forms of sensibility such as disremanative sensibility requires the co-operation of the cerebral cortex, but crude protopathic sensibility, especially pain, is consciously experienced when the communications existing between the thalamus and the cortex have been destroyed.

White substance of the hemispheres :—These fibres may be divided according to their course and connections into

three systems :—1. The commisural fibres-connect corresponding areas in the two hemispheres to one another. 2. The association fibres-connect different cortical areas of the same hemisphere to one another. 3. The projection fibres-connect the cerebral cortex with the brain stem and the spinal medulla. The chief commissial fibre is called the corpus callosum. It connects the two cerebral hemispheres and roofs in the lateral ventricles. It forms an arched structure, the genu which forms the anterior end, is bent downwards in front of the septum pellucidum and diminishing rapidly in thickness, is prolonged backwards to the upper end of the laminae terminalis as the rostrum. The body arches backwards with an upwards convexity and terminates posteriorly in the splenium, which is the thickest part of the corpus callosum. A sagittal section of the splenium shows that the posterior end of the corpus callosum is bent forwards acutely, the upper and lower parts being applied closely to each other.

The septum pellucidum is a thin vertical partition, consisting of two laminae, separated throughout a greater or a lesser part of their extent by a narrow interval, termed the cavity of the septum pellucidum, which does not communicate with the ventricles of the brain. It is triangular in form, with its base in front and apex behind. It is attached above to the inferior surface of the body of the corpus callosum ; below and behind, to the anterior part of the fornix, below and in front, to the upper surface of the rostrum of the corpus callosum. The lateral aspect of each laminae takes part in the formation of the medial wall of the anterior horn of the lateral ventricles and is therefore covered with ependyma. The laminae contain both grey and white substance, but they are so thin that the arrangement of their constituents does not afford much help in determining their phylogenetic history.

The interior of the hemispheres :—Within the two hemispheres are the two lateral ventricles. They are almost completely separated from each other by a vertical partition

called the septum pellucidum, but they communicate with the third ventricle and indirectly with each other through the interventricular foramen. They are lined with ciliated epithelium and contain cerebro spinal fluid, which is considerable in amount. The third ventricle is the derivative of the vesicles of the primitive forebrain and is a median cleft between the two thalami. Behind it communicates with the 4th ventricle through the Aqueduct of Sylvius, and in front with the lateral ventricles through the interventricular foramen. Some what triangular in shape with the apex directed backwards, it has a roof, a floor, an anterior and a posterior boundary and two lateral walls. The lateral walls are joined to each other across the cavity of the ventricles by a band of grey substance named the messa intermedia. The chorioid plexus :—It is a highly vascular frings of pia mater which projects into the ventricular cavity. In lateral ventricles it extends as far forward as the interventricular foramen where it is continuous with the corresponding plexus of the opposite side. The whole is of crescentic shape. It secretes the Cerebro-spinal fluid.

The cerebro-spinal fluid is a clear, slightly alkaline fluid, with a specific gravity of about 1007. It contains in solution inorganic salts similar to those in blood plasma, and also traces of protein and glucose. The cerebro-spinal fluid is secreted into the ventricles of the brain by the chrioid plexus. From the ventricles it passes through the median apperture of the fourth ventricle and the two lateral appertures there and so gain the subarachnoid space. Within the cranium the C. S. fluid flows upwards through the gap in the tentorium cerebelli and then forwards and laterally over the interior surface of the carebrum. Finally it ascends over the lateral aspect of each hemisphere to reach the arachnoidal villi associated with the superior sagittal sinus and so is able to pass back again into the blood stream. It supports and protect the delicate structure of the brain and maintains an uniform pressure on them. It comes in intimate relation with the nerve cells of the cortex and basal ganglia.

There are two more important structures in the fore-brain :—1. The Pituitary or the hypophysis and 2. The Pineal gland.

1. The pituitary body is a reddish grey, somewhat ovoid body measuring about 12 mm. in its transverse and 8 mm. in its antero-posterior diameter. It is attached to the end of the infundibulum and is situated in the fossa hypophysis of the sphenoidal bone in the base of the skull. The infundibulum, which is directed downwards and forwards contains a funnel shaped recess from the cavity of the third ventricle and is surrounded by an upward extension from the anterior lobe of the gland. The pituitary consists of an anterior and a posterior lobe.

2. The pineal body is a small conical reddish grey body which lies in the depression between the superior colliculi. It measures about 8 mm. in length, and its base, directed forwards is attached by a stalk or peduncle of white substance.

The sub-arachnoid cavity is the interval between the arachnoid and the pia mater. It contains the cerebro-spinal fluid and the large blood vessels of the brain. At certain parts of the base of the brain, the arachnoid is separated from the pia mater by wide intervals, which communicate freely with each other and are named sub-arachnoid cisternae ; in these the sub-arachnoid tissue is less abundant. The sub-arachnoid cavity communicates with the general ventricular cavity of the brain by three openings : One the median apperture (foramen of Mejendi) is in the middle line at the inferior part of the fourth ventricle ; the other two are at the extremities of the lateral recess of the same ventricle, behind the upper roots of the glossopharyngeal nerve. There is no direct communication between the subdural and the subarachnoid cavities ; communications exist between the tissue spaces in the nasal mucus membrane and the subarachnoid cavity through channels which are present along the course of the olfactory nerves. Through these communication the cerebro-spinal fluid is constantly escaping in the nasal cavity and keeps it moist.

THE PERIPHERAL PART OF THE NERVOUS SYSTEM.

The peripheral nervous system comprises the afferent or centripetal fibres which connect the sensory organs to the central nervous system ; and the efferent or centrifugal fibres which connect the central nervous system to the effector apparatus. The former is called the Sensory and the later the Motor fibres. It includes the 12 pairs of cerebral nerves, which arise from the brain, and the 31 pairs of spinal nerves which arise from the spinal medulla. The sympathetic trunk with their various ganglia and branches belong to this system. The origin of a nerve is in some cases single i. e. the whole nerve emerges from the nervous centre by a single root ; in other instances the nerve arises by two or more roots. The centrifugal or efferent nerve fibres are the axons of nerve cells situated in the grey substance of the central nervous system. The centripetal or afferent nerve fibres spring from nerve cells in the organs of the special senses or from nerve cells in the ganglia. Having entered the nerve centre they branch and send their ultimate twigs among its cells without however, uniting with them.

The cerebral nerves :—There are twelve pairs of cerebral nerves, named from before backwards :—1. Olfactory, 2. Optic, 3. Oculomotor, 4. Trochlear, 5. Trigeminal, 6. Abducent, 7. Facial, 8. Acoustic, 9. Glossopharyngeal, 10. Vagus, 11. Accessory, 12. Hypoglossal.

Closely associated with the olfactory nerves is a pair of small nerves named the nervi terminales. Each nerve runs along the medial side of the corresponding olfactory tract, and its branches traverse the laminae cribrosa of the ethmoidal bone, and are distributed to the nasal mucous membrane. Centrally the nerve is connected to the brain at the olfactory trigone ; its function is unknown.

The motor nerve arise within the brain from group of nerve cells which constitute their nuclei of origin. The sensory nerves arise from nerve cells outside the brain ; these

nerve cells may be grouped to form ganglia on the trunks of the nerves or may be situated in the peripheral sensory organs; such as the nose, eye etc. The centrally directed processes of the cells run into the brain and there end by arborising around nerve cells which are grouped to form the nuclei of termination of the ordinary sensory nerves. Fibres from the cells of these nuclei connects with the thalamus, whence a set of new fibres proceed to the cerebral cortex.

The spinal nerves :—These arise in series from the side of the spinal medulla and emerge through the intervertebral foraminae. Each nerve is formed by the union of an anterior, motor, and a posterior, sensory nerve root, but these roots perforate the spinal dura mater independantly before they unite, an indication that the two nerve roots remain separate throughout their course.

The spinal nerves number thirty one pairs and are grouped as follows :—Cervical 8, Thoracic 12, Lumbar 5, Sacral 5, and Coccygeal 1.

THE AUTONOMIC NERVOUS SYSTEM.

The autonomic nervous system comprises the splanchnic or visceral components of the nervous system and its fibres are distributed to the various viscera, glands and blood vessels and to unstriped muscle in general. It can be divided into two more or less complementary parts viz. the parasympathetic and the sympathetic systems, partly on anatomical, partly on physiological and partly on pharmacological grounds. Anatomically it can be demonstrated that most of the viscera of the body receive their nerve supply from two sources, one source being the parasympathetic system and the other the sympathetic system. The sympathetic system comprises two gangliated trunks, together with their branches of distribution and subsidiary ganglia. The parasympathetic system utilises certain of the cerebral and certain of the sacral spinal nerves as its pathways.

The parasympathetic has a limited origin from the cranial and sacral ends of the central nervous system, but

has a very wide field of distribution. Its fibres are found in 1. the oculomotor, 2. the facial, 3. the glossopharyngeal, 4. the vagus and accessory nerves, and also 5. in the second, third and fourth sacral nerves.

The sympathetic nervous system has a much wider distribution than the parasympathetic system, for it enervates all the sweat glands of the skin, the erector muscles of the hairs, and the muscular walls of the blood vessels. The fibres which it distributes are all derived from the central nervous system, but little is known concerning their central connections and pathways. Our knowledge of the functional significance of the sympathetic system is very incomplete, and most of the available information concerns the efferent rather than the afferent components.

A SUMMARY OF HUMAN PHYSIOLOGY.

The final action of the nervous impulse is determined by the tissue in which it ends. The nature of the nervous impulse is the same whether generated in a motor nerve cell or in a sensory nerve cell. Just like the electric current, with different manifestations in a lamp, fan or a bell. For many years the prevalent view was that the nerves are essentially tubes through which flows an exceedingly fine matter, of the nature of air or gas known as the animal spirit. Modern physiologists admit that the nature of the nervous impulse is unknown, but it is akin to electricity.

It is the accepted belief in physiology that any nerve fibre may conduct an impulse in both directions; and do so conduct the impulses when the fibre is stimulated in the middle of its course. Some chemical changes occur in the nerve cell during its activity. Evidence of this chemical change is found in the readiness with which the grey matter of the nervous system takes an acid reaction. In the brain increased mental activity is accompanied by a rise in the temperature of the brain substance.

An attempt is made to locate the organ essential for life. Arms and legs are appendages of the body and have been

removed completely without causing death of the animal. Of the internal organs partial or complete removal of the lungs, heart or the digestive tract has been performed without causing death, if proper steps are taken to nurse the animal. On the nervous system experiments have been done by removing different parts one by one. When the spinal cord is removed the animal lives. Very great care was necessary in the treatment of the animal after these operations ; but some survived and lived for long periods. The digestive, circulatory, and excretory organs performing their functions in the normal way. It is evident from these experiments, that, although the animal was living, its power of adaptation to marked changes in the external or internal environment was greatly lessened and this fact illustrates well the great general importance of the spinal cord and brain as reflex centres controlling the nutrition and co-ordinated activities of the body tissues and organs.

From ancient times cerebrum has been recognised as the organ of intelligence and consciousness. All modern work has confirmed this belief and has tended to show that in the cortex of grey matter lies the seat of consciousness. There is no doubt that the highest development of psychical activity in man is associated with the cortical matter of the cerebrum. In young infant, the dawn of its mental powers is connected with the development of the normal cortical structure, while in extreme old age the failure in mental faculties, goes hand in hand with an atrophy of the elements of the cortex. The cortical grey matter, is the chief organ of psychical life the tissue through whose activity the objective changes in the external world, so far as they affect our end organs, are converted into the subjective changes of consciousness.

Complete removal of the cerebrum :—In the most successful experiment the animal was kept alive for a year and a half, and the post mortem examination showed that all the cortex was removed. In addition a large part of the corpora striata and the thalami and a small portion of the

mid-brain had also been removed. After the immediate effects of the operation had disappeared the animal moved easily, there was no permanent paralysis of the so called voluntary movements. He answered to sensory stimuli of various kinds, but not in an intelligent way, if, for instance a painful stimuli was applied to the skin, he would growl or bark, and turn his head towards the place stimulated ; but did not attempt to bite. No caressing could arouse signs of pleasure, no threatening signs of fear or anger. The conspicuous defect in the animal was a lack of intelligent response. His memory records had been destroyed. He was not able to recognise food placed near him.

On human beings observation of a similar nature have been made on children born without the cerebrum. In one interesting case of this kind, in which post mortem examination revealed a total destruction of the cerebral hemispheres, the child lived for 4 years. During that time no signs of intelligence could be detected. The child never showed any recognition of its mother and lay for the most part in a somnolent condition without movements, the arms and legs showing also a condition of contracture. No cutaneous or general sensibility could be determined.

The cerebellum :—Operations have been performed for removing the cerebellum for studying the functions of this organ. When the whole of the organ is removed the animal lives, but shows a most distressing inability to stand or move. There seems to be no muscular paralysis, but, at first a total lack of power to co-ordinate properly the contractions of the vorious muscles involved in maintaining the equilibrium. The animal takes a most abnormal position, with the head retracted and twisted and any attempt to move is followed by violent disorderly contractions that may result in a series of involuntary somersaults. In man there are several cases on record in which the organ was shown by autopsy to be largely or completely atrophied. When the atrophy was partial the symptoms manifested were :— subjective

—headache, vertigo ; the objective symptoms—ataxic gait, muscular tremor and lack of skill in performing certain definite movements, which require the associated activity of several muscles—for example—the placing of the finger on the tip of the nose. He was liable to fatigue quickly.

The autonomic nervous system :—Complete removal of the cervical ganglia and the cervical part of the sympathetic trunk has been carried out in cases of bronchial asthma. The lumbar part of the sympathetic trunk and its rami have been subjected to operation and removal in cases of megalocolon. The whole of the sympathetic innervation in the dorsal region has been removed by the excision of the first and second thoracic ganglia and the portion of the trunk which connects them for treating cases of raynaud's disease. Thus it is seen that the autonomous system can be tempered without causing death. The Medulla Oblangata and the Pons :—It is the seat of centres which control the activity of the circulatory and respiratory organs. If the medulla and the pons are severed from the portion of the brain lying anterior to it the animal lives for a considerable period. The respiratory movements are performed rhythmically and the blood vessels retain their tone so as to maintain and approximately normal blood pressure. On the contrary destruction of medulla or severance of its connections with the underlying parts is followed by a cessation of respiration and a loss of the tone of the arteries, either of which results in a rapid death of the organism as a whole. The portions of medulla which exercise these important functions are designated respectively as the respiratory, and vasomotor or vaso-constrictor centres. Their location and to some extent their connections have been determined by physiological experiments, but so far it has not been possible to mark out histologically the exact group of cells concerned. These centres are of a special importance because of their wide connections with the body, their essentially independent activities in reference to the higher parts of the brain, and the absolutely necessary character of the regulations they effect.

In the development of the brain the functions originally mediated by the lower parts have been transferred more and more to the higher parts, specially with regard to conscious sensation and motion, and the so called higher psychical activities. But the unconscious and involuntary regulation of the organs of circulation and respiration and to a certain extent of other visceral organs has been centralised, as it were, in the medulla. In addition to the control of the respiration and circulation, other important reflex activities are effected through the medulla by means of the vagus nerve which has its nucleus of origin in this part of the brain. Such for instance, are the reflex control of the heart through the cardio-inhibitory centre and of the motions and secretions of the elementary canal.

On summary of the above we find that it is the medulla oblongata and the pons, more strictly speaking, the area of the floor of the fourth ventricle, which alone may be called seat of animal life, as they attempt to handle this area causes immediate death of the organism. Animal life or the vital energy is thus found to be located in this region.

Another most important characteristic of the brain is that when an impulse passes along a set of neurons, the activity of all other neurons are suspended i.e. the brain is capable of registering one and only one impression at a time.

In short we find :—

1. Animal life is located in the floor of the fourth ventricle.
2. Psychical life is located in the cortex of the cerebrum.
3. The Psychical life is dependent on the existence of animal life but not vice versa.
4. Certain groups of neurons take part in carrying an impulse and the brain attends to only one impulse at a time. When an impulse is passing along a set of neurons all other impulses are inhibited.
5. There are fixed areas in the cortex of the cerebrum

for controlling and feeling impressions from different parts of the body, and all sensations of pain or pleasure are recorded by the brain one at a time.

6. Through the help of association fibre one area of the cortex is in touch with many other parts. This is why one impulse brings out so many different impressions both of pain and pleasure.

7. Though we have no exact idea of the nature of the nervous energy the generally accepted view of the physiologists is that the nervous energy is created in the cell of a nerve by some chemical change. This chemical action is set up within a cell by a change in the hydrogen ion concentration of the blood plasma (in general sense by a change in the acidity and the alkalinity of the blood serum) in which the cells are practically immersed.

This summarised knowledge of Anatomy and Physiology will serve our purpose for locating the Sat-chakras, but if one likes to closely study the subject and to understand the various Yogic processes described in the Sastras a thorough and intense study of Anatomy and Physiology specially of the sections on Embryology and Neurology must be undertaken.

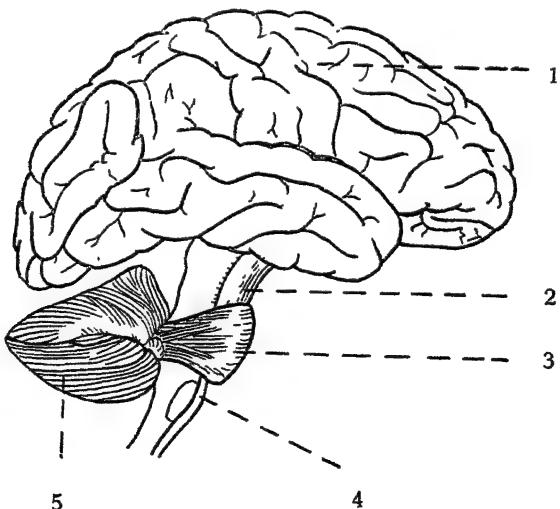
CHAPTER IV

The Identification of the Chakras etc.

The Sha tras have definitely stated that these chakras are to be found in the Linga sharir, and in the foreword we have shown that our brain satisfies all the descriptions of Linga sharir. The sanskrit word Linga means any particular sign. Our head, trunk, hands and feet are the special signs of this gross body which help us in identifying a human body. If we can find these body-parts in the brain then we will be justified in calling it the Linga sharir. Ancients have often taken help of imagination in ascribing shape to various objects. The collection of stars in northern sky, called the great bear, is the best example. The figure of a bear has been imagined with the help of only 7 stars. For less imagination will show the figure of a human body in the brain. The human brain consists of 5 parts, viz. 1. Cerebrum, 2. Mid brain, 3. Pons, 4. Medulla oblongata and 5. the Cerebellum. Figure 1. is a side view of the brain. In it we can imagine

FIG. 1

1. Cerebrum
2. Mid brain
3. Pons
4. Medulla Oblongata
5. Cerebellum

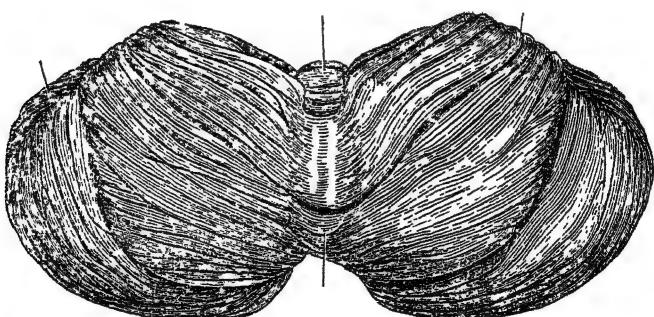


the cerebrum as a big head, and the mid brain as the chest, with two protruberances on the back; in the corpora quadrigemina. The pons represents a flat abdomen, the cerebellum

is the buttocks projecting backwards and the medulla oblongata represents the pelvic region with two small feet. See figure on Cover. The optic chiasma resembles the two crossed arms. This imaginary figure has been called the Vaman, dwarf, in the sashtras. There is a saying in sanskrit रथेतु वामनं दूष्यत् पुर्जन्मः न विद्यते। If one can see the Vaman on the ratha, chariot, he will escape all future rebirth. On this belief millions of person assemble at Puri every year to see the Ratha jatra, chariot festival, because another name of Jagannath is Vaman. The real significance however of this chariot festival is to see this dwarf or the Linga sharir by dhyan, meditation, in ones own body which is called the Ratha, chariot. All idols and festivals of the Bharatiya religion have an inner meaning and without understanding this the Western savants and the modern educated Indians pass uncharitable remarks against this wonderful conception of the Rishis. In due course we will show whence the conception of the image of Jagannath came.

We have imagined the cerebellum to be the gluteal region. Figure 2. shows the superior aspect of the cerebellum.

FIG. 2

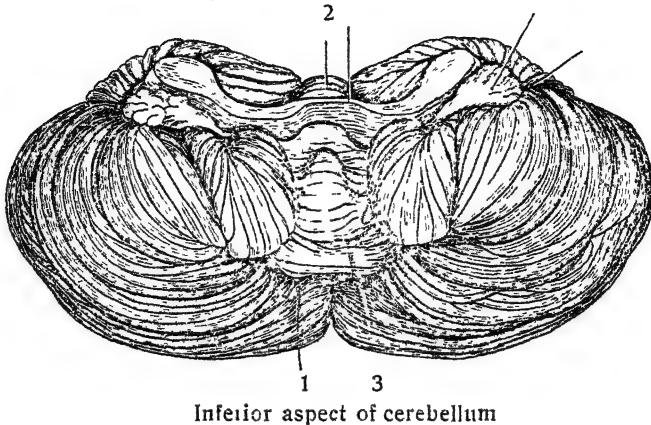


Superior aspect of Cerebellum—looks like buttocks.

Every one will admit that it looks like the two buttocks of a human body. Figure 3. shows the inferior aspect of the cerebellum. In it the pyramid looks like the scrotum, uvula looks like the penis and the area below the pyramids looks like the perineum. The Rishis cannot be blamed if they have named these parts as per name of these organs in the

gross body. It is in this Linga sharir and in a line with this perineum, phallus, navel etc. that we are to search for the

FIG. 3



1. Pyramid-looking like Scrotum
2. Uvula-looking like penis
3. This area-looks like anal fissure

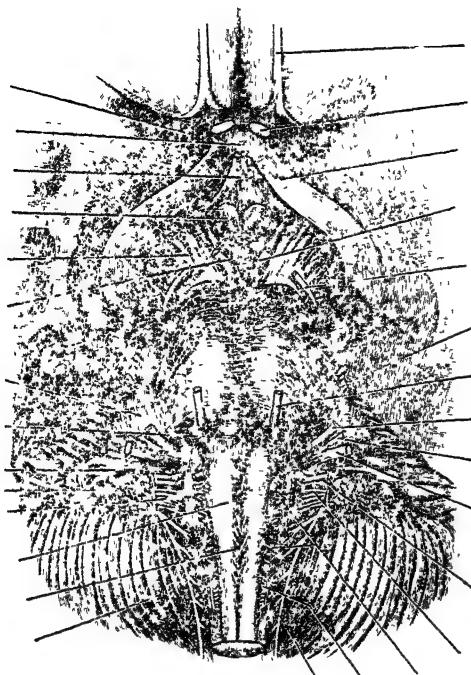
Inferior aspect of cerebellum

Sat-chakras. Once this identification of the Linga sharir is established all the descriptions of the shastras will be as clear as daylight. Our head is the seat of the brain and brain is the root of all our motions, sensations, nay of life itself, and this has been called the Moolam, root. Accepting the head to be the root, Lord Shree Krishna has described in the Geeta :—

ऊद्धूलं मधः शाखमश्वतम् प्राहुरव्रयम्
छन्दांसि यस्य पद्माणि यस्तं बेद स वेदवित् ॥

This perpetual human body is like an Aswatha, the Indian fig tree, with its roots spreading upwards and its branches spreading downwards, and the leaves of this tree, the nerve endings, cover the whole body. One who knows this tree is the true Vedagna, knower of the Vedas. Thus the head being the Moolam, root, its adhar, support is the place called Mooladhar. We know that the head sits on the 1st cervical vertebrae called Atlas. Therefore, the occipto-cervical junction is the Mooladhar. It was a mistake so long to call the perineum of the gross body to be the Mooladhar. Having identified the Linga sharir and the Mooladhar we now will try to compare the other descriptions. It is stated that in this Mooladhar there is a Kanda, tuber, which looks like the flower of a Datura stramonium, the common thorn apple. Figure 4

FIG. 4

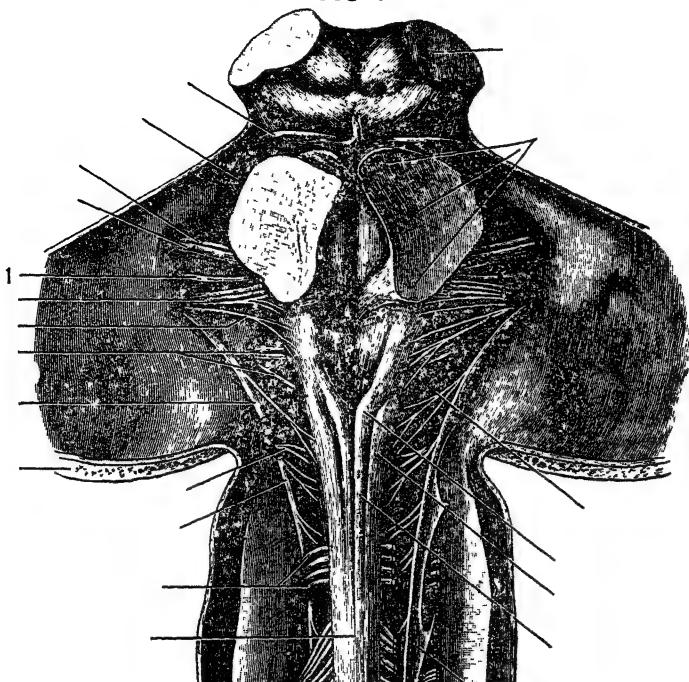


- 2 1. Medulla Oblongata—looks like a flower of Datura Stramonium—the Moolkanda
2. Pons—looks like an egg—Kalpayoni

shows the medulla oblongata, pons and the mid brain from ventral aspect. Every one will admit that the shape of medulla is really like that of a flower of the *Datura strammonium*. The length of this Kanda is stated to be 4 fingers which fully tallies with the modern measurement of the medulla oblongata. Just above this Mool-kanda is the organ Kalpa-yoni which has been described as looking like the egg of a bird and is about 4 fingers broad. The pons is located as seen in figure 4 just above medulla oblongata and the ventral aspect of the pons does really look like an egg. The description that a white, plaited, cloth-like substance is spread on the Kalpa-yoni fully tallies with the modern description of pia mater, a covering of the brain.

On the western face, dorsal aspect of this Mool-kanda and the Kalpa-yoni two triangles have been described, as mentioned before. Fig. 5. shows the upper part of spinal medulla, the hind and mid brains exposed from behind. The two triangles, one with apex up and the other with apex down and with their bases overlapping each other and thus forming

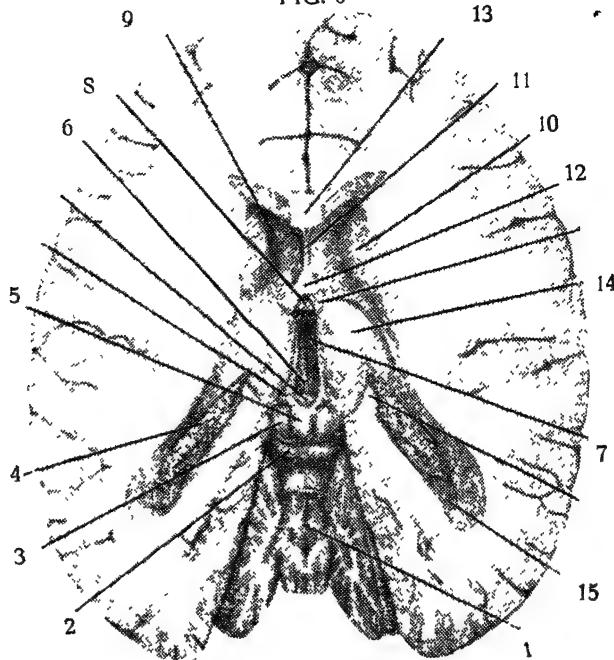
FIG. 5



The floor of the fourth ventricle—the Yonisthan, note the six cornered space formed by two triangles with bases overlapping.

into a six cornered rhomboid figure is clearly seen here. Thus the modern name of the Yoni-sthan is the floor of the fourth ventricle. It has already been mentioned that many nadis, nerves, are said to have their origin here. Of them 14 are most important. The names of these 14 nadis have also been mentioned. The portion of the brain stem from the top of the floor of the fourth ventricle upto the lower border of the third ventricle is the Sushumna nadi, and the spinal cord hanging down from the apex of the lower triangle of the floor of the fourth ventricle is the Alambusha nadi. The Brahma-randhra is said to be within the Sushumna nadi. In modern anatomy we find that the aqueduct of Sylvius is situated in the centre of the brain stem from the top of the fourth ventricle to the lower limit of the third ventricle. Fig. 6. shows a bristle passing down this aqueduct. Therefore, this is the Brahma-randhra, as described by the Rishis. Of the 14 nadis in this region, two having been identified, there

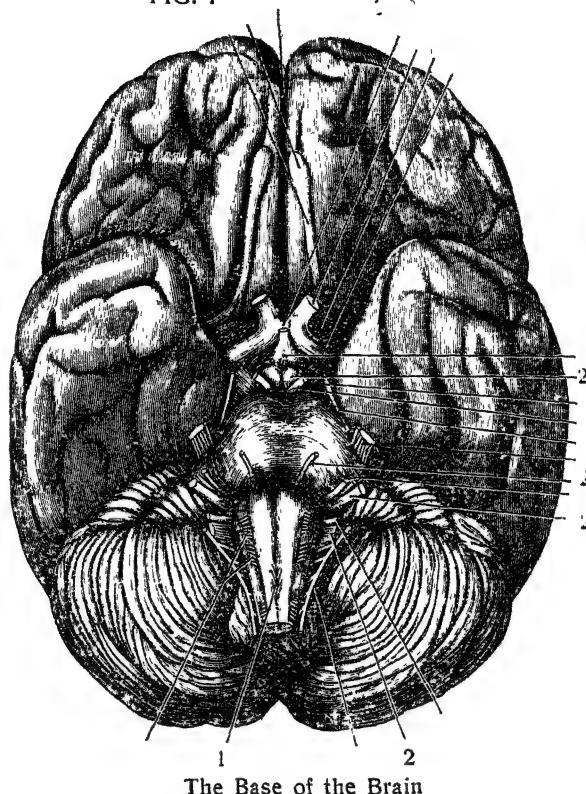
FIG. 6



Section of brain showing—1. Fourth ventricle—Yonisthan in Medulla oblongata—the Mookanda. 2 & 3. The corpora quadrigemina—the 4 hills Kamrup etc. 4. Left lateral ventricle—the Nya Hrada. 5. The Pineal gland—Van Lingam. 6. Bristle passed through the aqueduct of Sylvius—the Brahma-randra. 7. The massa intermedia—Poorna Chandra. 8. The chorioidal plexus—the Ardha Chandra excreting the cerebro-spinal fluid—the Sudha. 9. Anterior part of the left lateral ventricles—Nya. 10 & 15. The right lateral ventricle—the Area Hrada. 11. The septum pellucidum with its cavity—the Shunyasthan. 12. Fornix—the Rodhini. 13. The corpus callosum—the Sidhdha Kharga. 14. The thalamus—Ajnya Chakra.

remain only 12. These on the first appearance seem to be the 12 cranial nerves. Fig. 7. The Vishwodara nadi is said to have gone upto the stomach ; and we know that the Vagus nerve is so distributed as will be seen in Fig. 8. Therefore, without any hesitation, we can claim this Vishwodara nadi to be the Vagus nerve. The Saraswati nadi has been described as supplying the tongue and may correspond to the Hypoglossal or the Lingual nerve. See Fig. 9. The two nadis Payaswini and Shankhini are said to go to ears. The name Shankhini is very suggestive, as we know that the cochlea of the ear really looks like a shankha, snail. Figs. 10 & 11.

FIG. 7



1. The Medulla Oblongata—Moolkanda.
2. Cranial nerves—the Nadis.
- 3 Pons—Kalpayoni looks like an egg.

Therefore, there is no difficulty in identifying the Shankhini nadi which is the cochlear nerve, and so also Payaswini is the vestibular nerve, which is the second nerve supplying the ear. The two nerves Pusha and Gandhari have been described as supplying the eyes. Of these, Pusha is connected with light, because one of the many names of Sun in Sanskrit is Pusha ; and thus it is the name of the modern optic nerve. The second main nerve of the eye may be either Occulomotor or the ophthalmic. Any of these may be Gandhari. The two nerves Ida and Pingala go to the nostrils. These may be the modern Olfactory nerves, but from a study of the functions of these two nerves, as are to be found in "Pavan Vijay Swaradaya" and other Yogic texts, it is difficult to identify them with the modern olfactory nerve. These two nerves Ida and Pingala are said to be connected with our respiration according to these texts. But we know that the Olfactory

FIG. 8

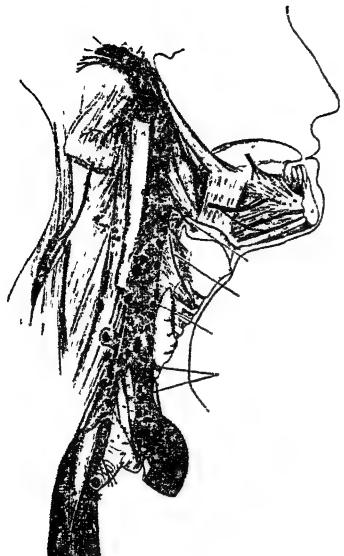
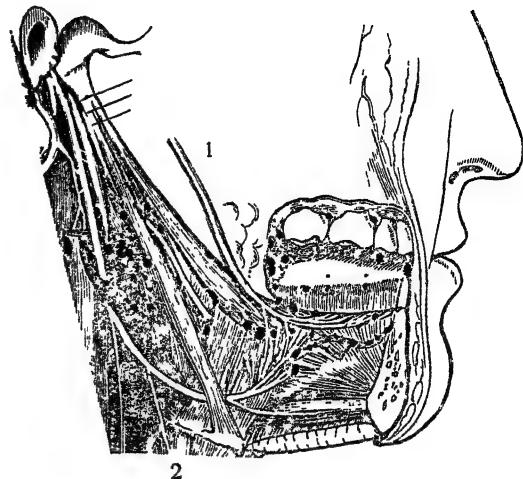
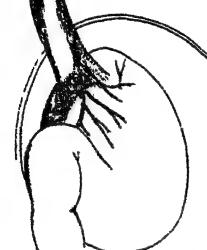


FIG. 9



1. The Lingual

2. The Hypoglossal Nerve—Saraswati Nadi



1. Vagus Nerve—Showing distribution on the surface of stomach—The Vishwadara Nadi

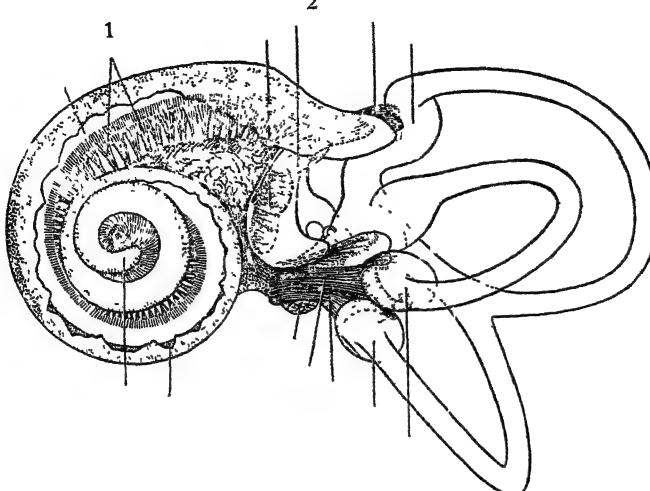
FIG. 10



1. The Cochlea

2. The Vestibule—
looks like a Shankha-
Snail.

FIG 11



1. Showing distribution of the Cochlear nerve—the Shankhini nadi.
2. The Vestibular nerve—the Payaswini nadi.

nerves have nothing to do with respiration. Regarding the respiration there is one peculiar fact which can be observed by any man but which has not been mentioned in any of our physiological texts. If one carefully observes his own breathing he will find that the force of flow of air through the two nostrils are not equal. Sometimes the force of the right nostril will be greater than that of the left nostril and vice versa. The Rishis have stated that this force of outgoing breath changes from right to left nostril and again from left to right at the end of every hour. When it is stronger in the right nostril it is stated that the Pingala is flowing and when the left becomes stronger it is said to be due to the functions of Ida. Therefore, these two nadis are connected with the force of the breath and the one controlling the force of right nose is called Pingala and the other controlling the force of left nose is called Ida. What are the modern names of these two nadis? In modern Anatomy we find mention of two nerves in the nose along with the description of olfactory nerves. These have been called the nervi terminale. The description runs thus in Gray's Anatomy:—"Closely associated with the olfactory nerves is a pair of small nerves

named the nervi terminale. These nerves were first seen in the lower Vertebrates, but their presence has been demonstrated in human embryo and the adult. They consists chiefly of non-medullated nerve fibres and on them there are small groups of bipolar and multi-polar nerve cells. Each nerve runs along the medial side of the corresponding olfactory tract, and its branches traverse the laminae cribrosa of the ethmoidal bone and are distributed to the nasal mucous membrane. Centrally the nerve is connected to the brain at the olfactory trigone ; in some animals its fibres have been traced to the lamina terminalis ; in others to the hypothelamic region. Its function is unknown". Can these two nerves be the Ida and Pingala of the Rishis ? We do not know positively but we are inclined to think them to be so. Further researches regarding the functions of these two nerves by the modern physiologist may establish the identification in future.

There is some mistake regarding the distribution of Varuna. In the Sloka quoted before it is mentioned as going to शेष which means the end, but in another Sloka quoted by Acharya Bhaskar Rao in the commentary on the Bhavonoupanishad the Varuna is said to be Sarvaga

तद्वाम दन्तं पार्श्वाभगां द्वे विश्वोदरं वारुणं
जटरात्ता सर्वगा च प्रोक्ते तद्वदनन्तरे ॥

In Yogi Yajnavalkya Ch. 1, we also get that Varuna is Sarvaga, every where.

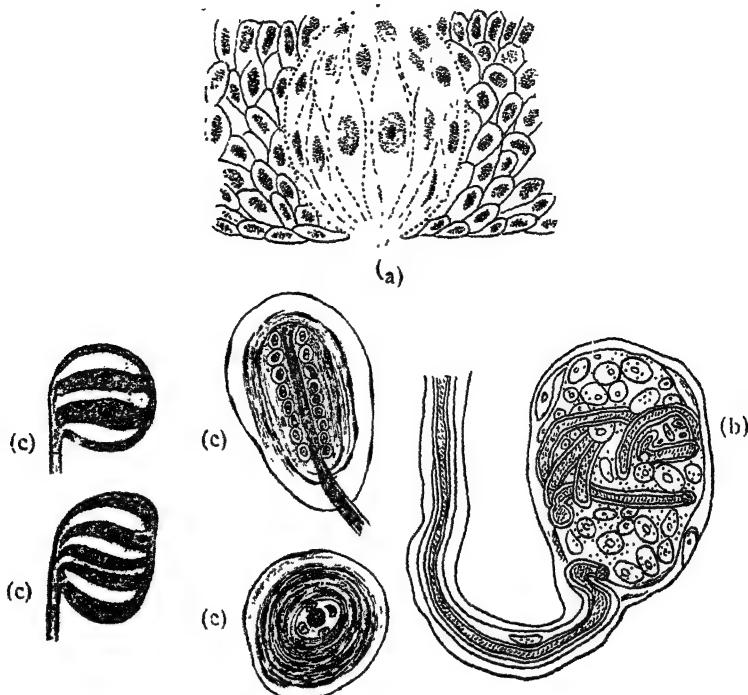
पूर्वभागे सुषुमाया स्फूर्मेद्राक्षं कुहुक्षिता ।
अधश्चोद्धुं च विद्वया वारुणी सर्वं गामिणी ॥

Therefore, the correct reading of the first quoted sloka seems to be ध्वजाऽसेपन्नासा This will make the distribution of Varuna equal with other slokas quoted above. The general meaning of the word Sarva is everywhere and so we find almost all the commentators of the post-Buddhist era describing Varuna to spread over the whole body. But the Sanskrit dictionaries "Savda-Kalpadruma and Kavi-Kalpadruma" have given another meaning. According to

these books the word means - the teeth and gums in the face. As there is no nerve which supplies the whole body alone we cannot accept the meaning of Sarva to be everywhere. But the second meaning helps us at once to identify the nerve as the trigeminal nerve specially its two branches—the maxillary and the mandibular which are distributed to all the teeth, gums etc. Most of the commentators belonged to post-Buddhist period and as such had no direct knowledge of Anatomy, but the slokas of Yogi Yagnabalka and others belong to pre-Buddhist period and they have applied the word Sarva in its Anatomical meaning of Gums, teeth, etc.

In studying these nerves we find one peculiarity in the description of the Rishis. Under the name nadi, they have described all the sensory nerves and not the motor nerves. The reason appears to be that whereas in performance of a function, the energy appears to be one, the various sensations carried by the sensory nerves appear to be the result of different methods of the working of the energy. The motor nerve endings in the muscles are almost of one standard type, but the sensory nerve endings vary a good deal according to the nature of the sensation it is to carry. Figure 12, shows various sensory nerve endings. Therefore, the twelve nerves mentioned by the Rishis round the Mulakanda will not tally exactly with the modern 12 cranial nerves as would appear at first. We have mentioned before that the Gandhari may be the oculomotor or the ophthalmic nerve but the latter being the sensory nerve supplying the eyes, seems to be the Gandhari. On the assumption that the Rishis have only described the sensory nerves, we find Saraswati to be the Lingual nerve Sankhini the cochlear nerve, Payaswini the Vestibular nerve, Pusha the optic nerve, Gandhari the ophthalmic nerve, Varuna the maxillary and mandibular nerves, and the Ida and Pingala are the two nervi terminale. Hasthi-Jihva is said to be distributed within the mouth and so it appears to be the sensory portion of the glossopharyngeal nerve. Kuhu is distributed to the region of penis and

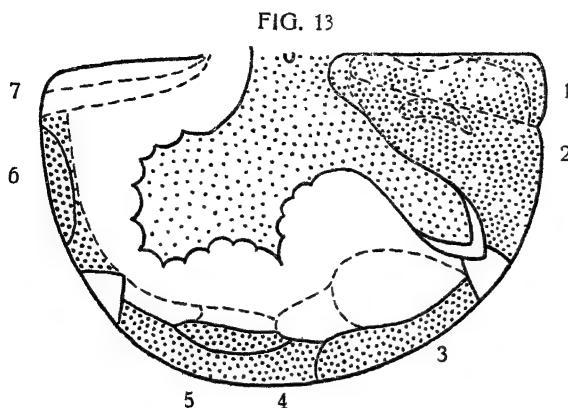
FIG. 12



(a) (b) (c) Various types of sensory nerve endings.

- (a) Sensory nerve endings in a taste bud of the tongue. (b) Sensory nerve endings—end bulbs of Krause, found in the conjunctive of eye and mucous membrane of lips and tongue. (c) Sensory nerve endings—tactile corpuscles conveying sensation of touch.

Yasaswini up to the tips of the toes in the leg. These two nerves on the first sight baffle identification. Modern Anatomy has not directly described any nerve rising from medulla and going to these parts direct. We have in the beginning identified Alambhusa with the whole of the spinal medulla but in our search for Kuhu and Yasaswini we find that this identification is incorrect. Modern Anatomy has taught us that the spinal medulla is not a single nerve. It is a mixed pathway. There are many motor tracts, many sensory tracts, with a central core of grey cells which contain the relay station cells of all the motor nerves that supply the body. As per our assumption that the Rishis have described the sensory side only under the name of nadis, we find in the spinal medulla sensory fibres in three distinct regions. See Fig. 13. 1. Fasciculi or



Diagrammatic section of Spinal medulla showing the sensory pathways.

1. Fasciculus Gracilis. 2. Fasciculus Cuneatus These two together forming the posterior funiculus—the Kuhu nadi. 3. Dorsal spino cerebellar fasciculus.
4. Ventral spino cerebellar fasciculus. 5. Lateral spino thalamic fasciculus. These three together forming the lateral funiculus—the Yasaswini nadi.
6. Anterior spino thalamic fasciculus. 7. Anterior Cerebro spinal fasciculus, These two together forming the anterior funiculus—the Alambusha nadi.

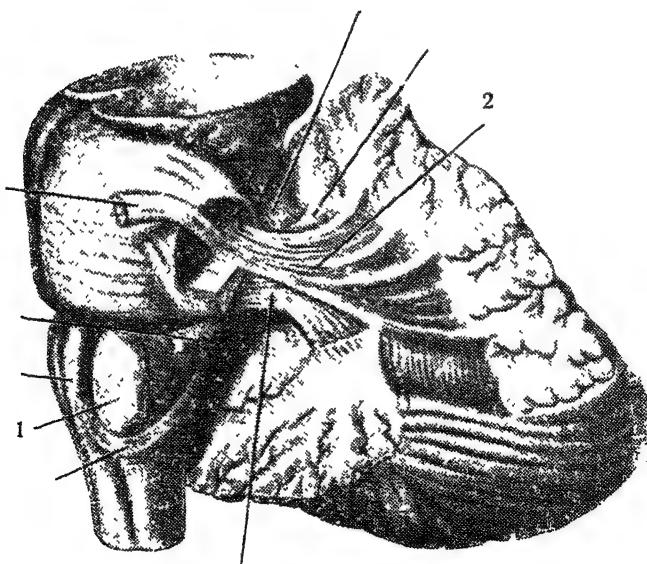
longitudinal nerve fibre groups in the anterior funiculus. 2. Fasciculi in the lateral funiculus and 3. The Fasciculi groups in the posterior funiculus. Of these, in the first group—the fasciculi in anterior funiculus, there is only one main sensory tract ; others are motor. This sensory tract is called the anterior spino-thalamic fasciculus. It is a path way for the coarser elements of tactile sensibility ; its fibres arise from cells in the posterior grey column and ascend to the thalamus. This seems to be the Alambhusa which has been said to go up to the Payu or coccygeal eminence which is the end point of the vertebral column. The second fasciculi in the lateral funiculus consists of the following ascending fasciculi :—

1. The dorsal spino-cerebellar fasciculus, 2. The ventro spino-cerebellar fasciculus, 3. The lateral spino thalamic fasciculus, 4. The spino tectal fasciculus, 5 The dorsilateral fasciculus and 6. The lateral inter segmental fasciculus. All these fasciculi carry sensory impulses from the posterior root ganglia of the vertebral nerves of the body which supplies all parts right up to the tip of the toe. So this seems to correspond to the Yasaswini nerve. The last fasciculus—the

posterior one consists of fasciculi Gracilis and fasciculi cuneatus. These fibres carry the sensory impulses from the abdominal viscera including the pelvic region. This appears to be the Kuhu nadi which has been described to be close to the central line on the dorsal surface of the Kanda having the triangle. A glance at the figure 13 shows that this posterior fasciculus is situated by the side of the middle line, the posterior sulcus of the spinal medulla which is continuous with the same in medulla oblongata. This confirms the view that the fasciculus in the posterior funiculus is Kuhu.

Thus we have been able to identify all the 14 nadis which have been described as located in the Yonisthan in kanda and kalpayoni. This identification at once clinches all argument and definitely proves that the medulla oblongata is the Mulakanda and the floor of the fourth ventricle is the Yonisthan. In this Yonisthan we first get mention of the Swayambhu linga. Figure 14, shows the olive. It really looks

FIG. 14



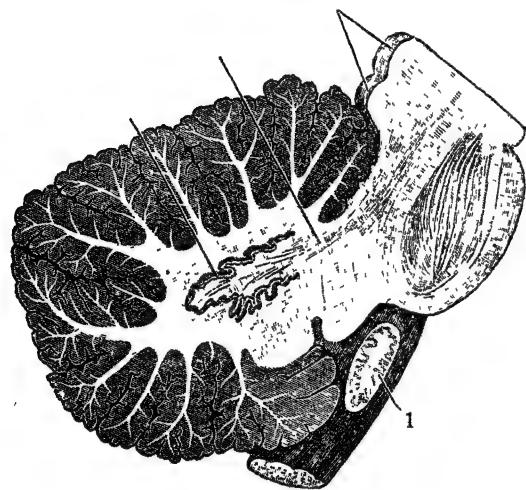
1. The Olive—Swayambhu Linga 2. Upward proceeding fibres of Cerebellum—Urdhamookha Sahashrara

like a stone Siva-linga as is generally used during the worship of Siva. The Swayambhu-linga has been described as follows—

तत्त्वये लिङ्गरूपी द्रुत कनक कला कोमलः पश्चिमासरो ज्ञान धगान प्रकाश
प्रथम किशलयाकार रूपस्तयम्भुः । उद्यत् पूर्णं न्तु विश्व प्रकर करवयास्त्रिष्व सञ्चान
हासी, काशीदासी, विलासी विलसित सरिदावर्तरूप प्रकाशि ।

This quotation devoid of its ornaments and metaphors gives a few salient data which help identification. These are :—
 1. Its shape is like a Phallus. 2. Its colour is like melted gold. 3. It is on the western face of the kanda. 4. Its form is like a new bud of a flower. 5. It has a central hollow part just as is seen in a whirl of water. No one reading the description of olive in an Anatomy and looking at figure 15

FIG. 15



1. Olive-showing-grey cells like a whil of water—
Saridavarte Rupa of
Swayambhu Lingam

will deny that the description is very very accurate. The olive is really a hollow collection of grey cells and in section the grey cells look like a whirl of water.

The Kulakundalini sakti is said to lie coiled up like a snake having three half coils on the top of this swaymbhu linga. The mouth of this sakti closes the opening of Brahmarandhra in the Susumna nadi. The Kulakundalini sakti is the vital energy and is the causative energy of respiration as will be seen from the following sloka of streetattwa.chintamani.

तस्योद्दृष्टे विश्वतन्तु सोदरलस्त् सूक्ष्मा जगत् मोहिनो ।
ब्रह्मद्वारं मुखं मुखेन मधुरं संक्षाद यति ख्यम् ॥

शङ्खवर्त्त निभा नदीन चपला माया विलासास्पदा ।
 सुसा सर्प समा शिवोपरि लसत् सार्द्धं त्रिवृत्ताकृतिः ॥
 श्वासोच्छास-विवर्तनेन जगता' जीवोयया धार्यगते ।
 सा मूलाम्बुज गह्वरे विलदति प्रोद्धाम दीपावलिः ॥

It means that the Kula-kundalini shakti is very fine, like the fine fibres in the stem of a lotus, and she is coiled up like a snake with three & half coils. The mouth of this serpent is lying close to the opening of the Brahma randhra, which is almost plugged by her. She is located on the head of the Swayambhu Linga. She is the vital energy and the causative energy of respiration. These slokas have described some physical features. We know that the energy is invisible and can only be observed when it acts through some apparatus. Here is the description of the apparatus & from it we are to focus our attention on the energy which acts through the apparatus. This practice of fixing the idea of energy through the description of the apparatus has the sanction of Bharatiya Nyaya, logic. It sets down the rule प्रसिद्धं पदं समभिवग्नाहारस्यापि शक्तिं ग्राहकत्वात् which means that one is to look to the energy aspect when known parts are named. This rule is followed in general practice also. When we mention that this motor will drive a compressor, it is meant that the energy working through the motor is powerful enough to drive the compressor. We focus our attention on the energy aspect of the word motor and not on its physical aspect. We shall have to understand every description of the Rishis according to this rule of logic and this is the cause why every commentator has elaborated on the energy aspect completely ignoring the apparatus aspect and this has gradually brought in this confusion in understanding the terms Linga sharir etc.

We will now try to locate the apparatus through which the Kundalini manifests itself. It is stated to be located above the Swayambhu Linga which has been identified as the Olive. Physiology teaches us that the Respiratory centre is located in the floor of the fourth ventricle above the olive. There

are two respiratory centres, one for inspiration and the other for expiration. The inspiratory centre is located higher up some where opposite to the corpora quadrigemina, which place is the Hridaya, chest of the Linga sharir, where as the expiratory centre is located near the centre of the floor of the fourth ventricle, in a line opposite to the guhya, anus, of the Linga sharir. Modern Histology and Anatomy have not yet described any fibre in this region extending from the inspiratory to the expiratory centres. According to the description of the Rishis there are some fibres or it may be a single nerve fibre, or it may be a group of nerve cells spread in three half coils between these two centres. According to the shastras one is to meditate on the Kundalini shakti as follows :—

ध्यायेत कुण्डलिनीं देवि स्वप्रम्भु लिङ्ग संस्थिताम् ।
श्यामा॑ सुक्ष्मा॑ सृष्टिरूपा॑ सृष्टिस्थितिलयात्मिका॑ ॥

The Kundalini Sakti is located on top of the Sayambhu Linga. Her colour is bluish and she is the causative energy of creation, maintenance and destruction. In the description of the floor of the fourth ventricle we find in Greys Anatomy "The sulcus limitans forms the lateral boundary of the medial eminence. Its superior parts corresponds with the lateral limit of the fossa and presents a bluish grey area, named the locus coeruleus, which owes its colour to a patch of deeply pigmented nerve cells termed the substantia ferruginea Below the inferior fovea and between the trigonum hypoglossi and the lower part of the area acustica, is a triangular dark field named the trigonum vagi which overlies the dorsal nucleus of the vagus nerve. We think that this area having blue colour may be the apparatus aspect of the Kulakundalini. Many modern physiologists hold that there may not be two distinct centres for respiration, on the other hand, it may be that there is an area there, of a certain length and its upper part function as inspiratory and the lower portion as expiratory centres. This theory is more in a line with the description of the Rishis and the nerve cells extending over the area may

be arranged in a coil having threehalf turns or five turns from the lowest to the highest limit. We must not try to find coiling fibres in this region because fibres do not generate energy but they only carry it. It is the cells that generate energy and the energy which is the cause of respiration must be generated in cells in this region spreading over some length below from the nucleus of vagus nerve which acts on respiration up to the point opposite to the corpora quadrigemina and is arranged in a coil. Modern physiologists and histologists will do well to try to find out the arrangements of grey cells in this region.

From a description in anatomy we find that the olive is a long structure which is situated dorsal to the Pyramid and the nucleus underlies the surface elevation of the olive and extends upwards almost to the pons. It may be for this reason that in the description of Swayambhu Linga some texts mention it to be in the Muladhar and others in the Swadhistan. Both are right. Similarly, the location of Kundalini Sakti by some in the Muladhar and by others as in Manipur opposite to navel and again by others as in Anahata opposite to chest are all correct, as we have found before that the respiratory centre extends over an area from the nucleus of vagus to the point opposite to corpora quadrigemina. The energy generated in the centre of inspiration which is situated higher up in a line with the corpora quadrigemina, the chest or hridaya, is called pran-bayu. The energy generated in the expiratory centre which is located in the floor of the fourth ventricle, in a line with the Anus of the Linga-sharir is the Apan vayu. This clearly shows that the meaning of the word vayu here is the nervous energy and not the atmospheric air as is the usual translation. We will have occasion to describe this in detail again when we will discuss the process of pranayam in Book V.

The view that Muladhar is the Medulla Oblongata and the Yonisthan with the seat of Kulakundalini is the floor of

the fourth ventricle is further supported by the Yoga-Kundalini Upanishad, a book of pre-Buddhist era. In it we find :—

हरि ३० । हेतुद्वयं हि विक्षस्य चासना च समीरण ।
 तयोर्विनष्टे एकस्मिंस्ताद् वपि विनश्पतः ॥
 तयोरादौ समीरस्य जयं कुर्यावरः सदा ।
 मिताहारश्चासनं च शक्ति चाल स्थृतीयकः ॥
 कुण्डलेण भवेच्छक्ति स्थानु संचालयेद् बुधः ।
 स्थस्यानादाभुवोंमध्यं शक्ति चालन मुच्यते ॥
 तत् साधने द्वयोर् मुख्यं सरस्वत्यास्तु चालनं ।
 प्राणरोध मथाभगासादज्जी कुण्डलिनी भवेत् ॥
 तयोरादौ सरस्वत्याश्चालनं कथयामि ते ।
 अहन्यात्येव कथिता पुराविद्वि सरस्वती ॥
 यस्या संचालनेनैव स्वयं चलति कुण्डली ।
 इडाया वहति प्राणे बद्धा बद्धासनं दृढम् ॥
 द्वादशङ्कुल दैर्घ्यं च अम्बरं चतुरङ्कुलम् ।
 विस्तीर्यं तेन तन्नाढी बेष्टयित्वा ततः सुधी ॥
 अङ्गुष्ठं तज्ज्ञ नीभगा तु हस्ताभगा धारयेद्धम् ।
 स्वशक्तगा चालयेद्वामै दक्षिनेन पुनः पुनः ॥
 मुहुर्त्तद्वयं पर्यग्नं निर्भयाश्चालयेत् सुधी ।
 ऊर्ध्वं माकर्षयेत् किंचित् सुषुम्ना कुण्डली गताम् ।
 तेन कुण्डलिनी तस्या सुषुम्नाया मुखं ब्रजेत् ।
 जहाति तस्मात् प्राणोऽयं सुषुम्ना ब्रजति स्वतः ॥

There are two main causes for the fickleness of mind. The first is Vasana, never ending desire, and the second is the Samiran, the ever active nervous energy. If one of these can be stopped then the other is also automatically conquered. Of these two causes, one is to try to conquer the ever acting nervous energy in the beginning. This can be done by 1. Mithahar—well regulated light food, 2. Ashan—particular posture of sitting and 3. Saktichalan, moving the energy along a fixed path. Kulakundalini is the sakti, energy, and she is to be moved from her own place to a point opposite to the

centre of the brows. There are two ways of practising this saktichalan; the first is moving the Swarasati nadi and the second is controlling the pran-vayu. Of these, the first i. e. moving the Swarasati is now described. Another name of Swarasati is Arundhuti. For doing this follow the instructions given below :—Sit in Padmasan—a particular posture of sitting to be described later in Book V: and when the breath will be flowing with greater force in the left nostril, begin this practice. Take a piece of strong cloth about twelve fingers long and four fingers broad. Wrap the Swarasati nadi—the tip of the tongue as already described while dealing about nadis—with this cloth, and holding the edges of the cloth in both hands by the thumb and the first figure produce a sidewise to and fro motion in the cloth. One is to do this for two full muhurthas—about one hour thirty six minutes, without being afraid of any bad consequences. While exerting the to and fro motion the tongue is to be pulled forward and upward now and then. As a result of this exercise the pran-vayu which was flowing in the left nostril will stop and the energy will proceed through the Susumna nadi. This is called the sakti-chalan process.

What effects will be produced by this exercise ? The to and fro motion of the cloth will rub the tongue and all sensory nerve endings will be stimulated. This stimulation will proceed along the nerves to their seat of origin in the floor of the fourth ventricle and will cause a stimulation of all the nuclei of grey cells located in this region. The occasional forward and upward pull on the tongue will stretch all nerves, sensory and motor, in the tongue which will again cause stimulation of grey cells in the floor of the fourth ventricle. We know that the vagus nerve originates here and the stimulation of vagus will exert an inhibitory action on the process of respiration and circulation. It is claimed that the energy generated here as a result of stimulation of the cells in the respiratory centre area will proceed upwards, this is called to be the Utthan or rising of Kulakundalini. The exercise is to

be practised daily and gradually the energy proceeding from these grey cells will travel along the fibres in the brain stem and reach the top of the brain. We know that normally the energy from the cortex cerebri travels down but by this exercise the energy of the grey cells outside the cortex is made to go to the cortex. It is further claimed that when this takes place the fickleness of the mind disappears and it becomes calm and ready to reflect the Brahman.

This exercise clearly identifies the floor of the fourth ventricle to be the seat of the Kulakundalini sakti and, therefore, it is the Muladhar Chakra. It is interesting to note how the clear Anatomical conception of this exercise described in books of pre-Buddhist period deteriorated in the post-Buddhist commentaries. The commentators of this later age clearly forgot that the Swarasati nadi goes to the tongue and that the fourth ventricle which is in a line with the annus and penis of the Linga sharir is the seat of Kulakundalini in the Muladhar chakra. They began to locate the muladhar within the vertebral column in a line with the centre of the perineum in the gross body and failing to understand how the exercise of tongue will stimulate kundalini located here, translated the word Swarasati to be synonymous with Shusumna, which according to them was the spinal cord. But this brought in another difficulty. They failed to understand how one is to wrap the Shusumna nadi which was within the vertebral column according to them. So they instructed one to use this cloth as a loin cloth only, as will be seen from the description in Goraksha Sanhita and Hotoyoga Pradipika. The Goraksha Sanhita writes in Sl. 104 to 107 Ch. 1.

नाभि संबेद्य वस्त्रे न च नप्तो वहि स्थितः ।
गोपनीये गृहे स्थित्वा शक्ति चालनमभ्यसेत् ॥
वितस्ति प्रमितं दीर्घं विस्तारे चतुरद्गुलम् ।
मृदुलं ध्रवलं सुक्षमं वेष्टनाम्बर लक्षणं ॥
एवम्बर युक्तं च कटि सुव्वेन योजयेत् ।
भस्मना गात्र संलिप्तं सिद्धाद्वन समाचरेत् ॥

नासाभग्नं प्राणमाकृष्ट अपाने योजयेत् वलात् ।
 तावदाकुंचयेत् गुह्यं शनै रथिनी मुद्रया ॥
 यावद् गच्छेत् सुषुम्नायां वायुः प्रकाशयेद्दृष्टात् ॥

The exercise of saktichalan is to be practised alone in a secret room. Take a piece of cloth about one Vitasti i.e. 12 fingers long and 4 fingers wide. This cloth should be a soft and white one. It is to be fixed to a string placed round the abdomen and the cloth should cover the navel. Then one will smear his body with ashes and sit in Siddhasan— a special posture of sitting. He will then draw pran-vayu through the nostrils and join it with apan-vayu by force, at the same time he will contract and relax alternately his anal region till the vayu enters the Shusumna. This exercise of relaxing and contracting the anal opening is called Aswini Mudra.

One cannot make any head or tail of this description and it is not at all clear what one is to do with the piece of cloth. Similarly in Hoto-Yoga-pradipika the description of this saktichalan exercise is more ambiguous Sls. 113 to 118 ch. 3.

ऊर्ध्वं वितस्ति मात्रं तु विस्तारं चतुर्ङुलम् ।
 मृदुलं धबलं प्रोक्तं बेष्टिताम्बर लक्षणम् ॥
 सति वज्रासने पादौ कराभग्नं धारयोद्दृम् ।
 गुरुकदेश समीपे च कन्द्रं तद्र प्रपोडयेत् ॥
 वज्रासने स्थितो योगी चालयित्वा च कुरुडलीम् ।
 कुर्यादनन्तरं भवता कुरुडली माशु वोधयेत् ॥
 भानोराकुंचनं कुर्यात् कुरुडलीं चालयेत्ततः ।
 सृतुग वक्त् गतस्यापि तस्य सृतुग भयं कुतः ॥
 मुहुर्तेद्वयं पर्यग्न्तं निर्भयं चालनादसौ ।
 ऊर्ध्वं माकृष्टते किंचित् सुषुम्नायां समुदगता ॥
 तेन कुरुडलिनि तस्याः सुषुम्नायां मुखं ध्रुवम् ।
 जहाति तस्मात् प्राणोऽयं सुषुम्नां ब्रजति स्वतः ॥

This writer failing to understand as to what one is to

do with the cloth, has described that this cloth is mentioned here in a figurative senses. 12 fingers above the anus is the seat of Kanda, which is the sushumna or the saraswati nadi and which is 4 fingers broad. This kanda is covered with a cloth like substance and it is this substance which is referred to. He has asked one to sit in Vajrasan—a particular posture to be described later on in Book 5—and to hold the feet by the two hands firmly. Thus seated, he is to press the Kanda by his heels and to move the Kundalini. For this purpose he will do Bhastra—a process of pranayam also to be described later on in Book 5. If he can do this then he will be saved even if he be on the point of death. This exercise is to be done for two muhurtas, 1hr. 36m. Then he is to pull his pran vayu up and by so doing it will enter the sushumna.

We have quoted these to show how the pure anatomical knowledge ; which was the base of this shakti-chalan exercise, deteriorated and was mutilated beyond recognition. We need not dilate this any more.

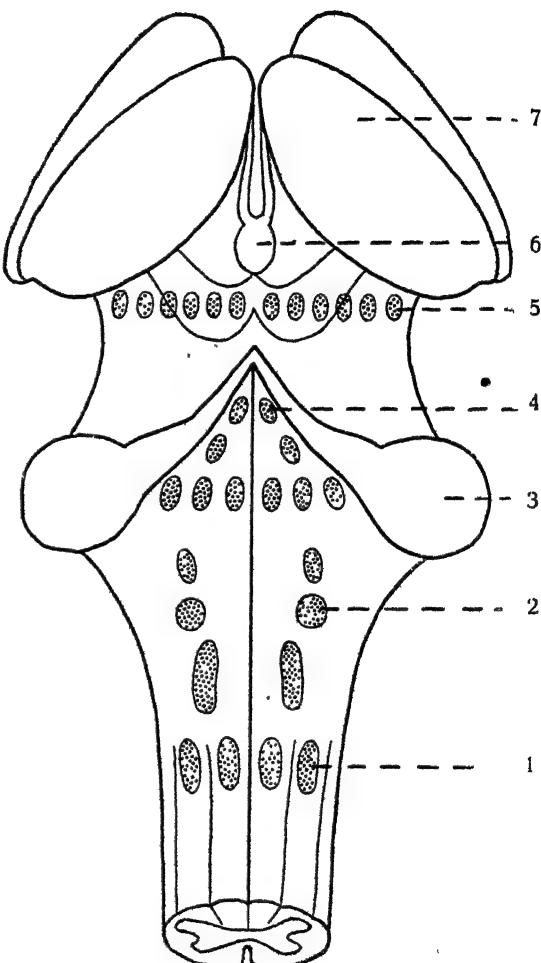
So far we have been trying in great detail to identify and fix the location of the Mool-kanda and the Yonisthan because these are the most important parts. Once these be definitely known, identification of other chakras will be easy. From the external description of Mookanda and Yonisthan we are sure that they are the modern medulla oblongata and the floor of the fourth ventricle. Looking to the internal descriptions we find that in Mookanda in a line with the perineum of the Linga sharir is the Mooladhar chakra which has four petals. Fig. 16, shows diagrammatically the positions of the nuclei of grey cells within the substance of the brain stem. In this, in a line with the so called perineum of the Linga sharir, 4 nuclei of grey cells are seen. These have been described by the Rishis as the 4 petals of the Mooladhar chakra. The same fig. shows that a little above this, in a line with the uvula of the cerebellum, there are six nuclei of grey cells, and still higher in the substance of the pons, in a line with its centre, there are 10 nuclei of grey cells. These

beautifully agree with the description of the Swadhisthan chakra, in a line with the root of penis and the Manipur chakra in a line with the naval of the Linga sharir. Acharya

FIG. 16

(Diagrammatic Representation)

1. The four nuclei in medulla oblongata—4 petals of Mooladhar Chakra . . .
2. The six nuclei in Pons—6 Petals of Swadhisthan Chakra
3. The Cut surface of Cerebellar peduncles
4. The ten nuclei near the junction of Pons and Midbrain—the 10 petals of the Manipur Chakra in Navisthan
5. The twelve nuclei in mid-brain—the 12 petals of the Anahata Chakra in Hridayasthan
6. The Pineal gland—the Van Lingam
7. The two thalamis—the 2 petals of the Ajnya Chakra



Bhaskar Rao, already quoted, writes in his commentary, that there are two sahasrars on either end of sushumna, one of the sahasrars located below is facing up and the second one located above is facing downwards. There is no difficulty now to understand this description. The cerebellum, whose fibres proceed upwards is the lower urdhamukha sahasrar, and the cerebrum whose fibres pass down-wards is the adhomukha sahasrar, and in between these two, the brain stem is the

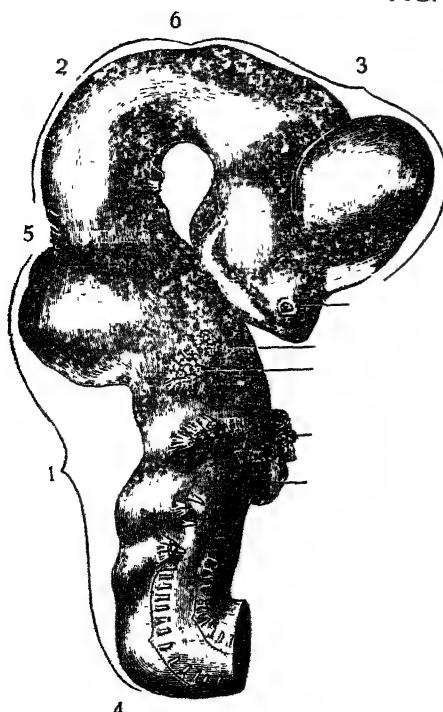
sushumna. The aqueduct of Sylvius is the Brahma-randhra in the sushumna nadi. According to this commentator there are two more chakras or padmas below the Mooladhar, called the Vishu padma and the Kula padma. Below this is the location of the lower sahasrar. Therefore, according to him there are the following structures above the lower sahasrar in order from below upwards :—

1. Kula padma—it has 8 petals.
 2. Vishu padma—it has 6 petals.
 3. Mooladhar padma—it has 4 petals.
 4. Swadhisthan padma—it has 6 petals.
 5. Manipur padma—it has 10 petals.
 6. Anahata padma—it has 12 petals.
 7. Vishudha padma—it has 16 petals.
 8. Ajnya padma—it has 2 petals.
- Total 8 padmas with 64 petals.

This means that in the sushumna nadi there are 64 petals in these 8 chakras. Any modern anatomy also shows that in the substance of the brain the total number of important nuclei of grey cells equal 64. Besides these 64 nuclei there are few unimportant small collections of grey cells, and the Rishis have also described a few extra chakras like the Lalana chakra and others, and have called them unimportant. So it is evident that the Rishis have described these nuclei of grey cells under the term of dalas of the chakras or padmas.

Modern anatomy teaches us that in the embryo, the neurenteric canal, from which brain and spinal cord develops, gets bent on itself and 3 constrictions appear in it. Different parts of the brain viz. the hind brain, the mid brain and the fore brain are located between these constrictions. Fig. 17 shows these constrictions well. Of the 64 nuclei 34 are located in the hind brain, 12 in the mid brain and 18 in the fore brain. The Rishis have described 3 granthis or constrictions in the Linga sharir. The first one is called the Brahma granthi: It is located in the naval and as such the kula chakra with 8 petals, the Vishu chakra with 6 petals, the Mooladhar chakra with 4 petals,

FIG. 17



The neurenteric canal in foetus showing the constrictions and parts of the brain in formation.

1. The Hind brain
2. The Mid brain
3. The fore brain
4. The first constriction—Brahma granthi
5. The second constriction—Vishnu granthi
6. The third constriction—Rudra granthi

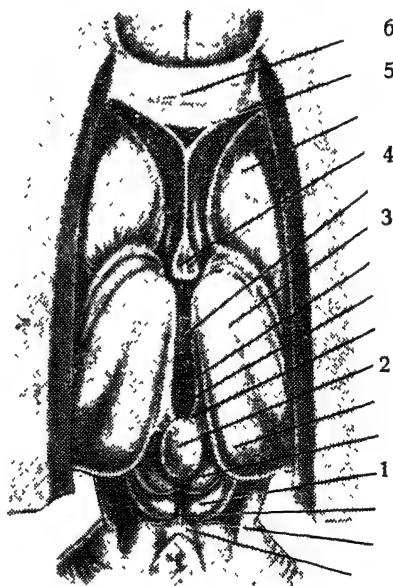
Swadhisthan chakra with 6 petals, and the Manipur chakra with 10 petals a total of 5 chakras with 34 petals are all located below the Brahma granthi. The second granthi is called the Vishnu granthi and it is located near hridaya, chest. So there is only one chakra, the Anahata, with 12 petals between the Brahma granthi and the Vishnu granthi. The third granthi is called the Rudra granthi. It is located in the Bhru madhya, the centre of the brows of the Linga sharir. So there are two chakras, the Vishudha with 16 petals and the Ajnya with 2 petals in the space between Vishnu granthi and the Rudra granthi. It requires no great imagination to identify the space upto Brahma granthi as the hind brain, the space upto the Vishnu granthi as the mid brain and the space upto the Rudra granthi as the fore brain. The number of nuclei of grey cells also tally fully, there are 34 nuclei in hind brain, 12 in mid brain and 18 in fore brain. Thus this identification is perfect. In the sub-thalamic region there are 16 nuclei which have been called the Vishudha chakra by the

Rishis and the two thalami have been named the Ajnya chakra with 2 petals.

In the Anahata chakra, which is located in a line with the chest of Linga sharir, another phallus or Linga, called the Van Linga, has been described. This is located in the west face of the chakra. In the centre of the chakra is a triangular space in the Brahma randhra which has been called the cave of the Hridaya, heart. Four hills called Kamrup giri, Jalandhar giri, Uddian giri and the Purna giri have also been described here. Over these 4 hills is the space called Kailash and it is here that the Van Linga is located. This is practically a full description of the mid brain Fig. 18. There are 12 nuclei of grey cells in this region which have been called the 12 dalas

FIG. 18

1. The four corpora quadrigemina—the four hills named Kamrup etc.
2. The Pineal gland—the Van Lingam
3. The Thalamus—the Ajnya Chakra
4. The fornix—Rodhini
5. The Cavum Septum Pellucidum—the Shunyasthan
6. The Corpus Callosum—the Sidha Khaiga



of this chakra. The aqueduct of Sylvius enlarges a little in this region and on transverse section has a triangular appearance, and this has been called the triangular cave of the heart. On the dorsal aspect of the mid brain the 4 corpora quadrigemina tally with the 4 hills described in this region. The area of location of the pineal gland is Kailash and the

gland is the Van Linga. In the dhyan, directions for meditation of the Van Linga we find :—

ऐं प्रमत्तं शक्ति संयुक्तं बाणारुपं च महाप्रभम् ।

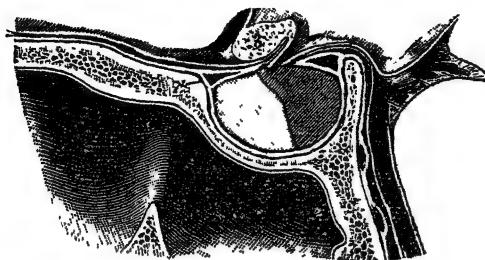
कामवाणान्वितं देवं संसार दहन त्तमम् ।

शृङ्गरादि रसोल्लासं बाणारुपं परमैश्वरम् ॥

The Van Linga is the source of all destructive energy. It has the power of destroying whole creation in a second. He holds the kamvan. The destructive energy is antagonistic to the maintaining energy. The Rishis have called this destructive force the Tama guna, and the maintaining force is called the Satwa guna. The modern extra pharmacopia has described the action and therapeutics thus :—"The pineal extract is called conarium. Little is known of the functions of the pineal gland, it is suggested that it may contain a substance which antagonises the action of the anterior lobe of the pituitary. Pineal extract in rats have retarded the rate of growth and accelerated the rate of differentiation, and has hastened the onset of adolescence in the offspring of the treated parents. The end result is dwarfism associated with sexual precocity and relative macrogenitalismus. An extract of pineal gland neutralises the growth stimulating effect of the pituitary. The chief activity of pineal is an anti gonodotrophic effect. "Thus we find that its function is anti pituitary. This leads us to the identification of the pituitary. The Rishis have described it by various names e.g., Shaligram shila, Narain shila, Rudrakshya etc. The Shali gram shila is formed in a cave of a hill and when formed it is carried along a current of water. It is called the abode of Vishnu, the Lord of Satwa guna—energy of maintainance. The pituitary body is located, separated from the rest of the brain, in a fossa of the cranical bone. Therefore the description that it is to be found in a cave of the hill appears appropriate. See Fig. 19. In shape pituitary resembles the shaligram shila as seen in temples. It is a ductless gland and its secretion mixes with the blood direct, this is the meaning of the description of the

shastras that when formed it flows out in the water. Regarding its function the extra pharmacopea writes:—"The anterior part of the pituitary gland is the most important division of

FIG. 19



1. Showing Pituitary gland located in a separate fossa of the cranium—Shaligram Shila.

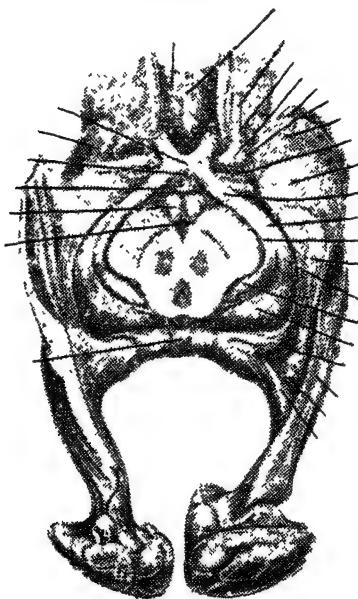
the pituitary body in the mammal. Through its hormones it appears to touch nearly all the physiological processes of the vertebrate organism. The following are some of the physiological effects 1. A specific, stimulus to the general body growth 2. A thyrotrophic action, 3. A gonado-trophic effect, 4. An adrenotrophic or cortico trophic effect, 5. A mammary secretagogue action or prolactin effect, 6. A diabetogenic action, 7. A ketogenic effect, 8. An increase in liver fats, 9. A decrease in blood lipoids, 10. An increased secretion of insulin (pancreatrophic action), 11. Lowering of the respiratory quotient, 12. Increase in metabolism, 13. Inhibition of insulin hypoglycemia, 14. Inhibition of adrenalin hyperglycemia, 15. Retention and increase of the carbo-hydrate stores, 16. Chromatophore and erythrophore expanding effect. In short it is the main source of energy for maintaining the body in its normal level." These are all included in the meaning of the word "Satwa-guna" and, therefore, this pituitary body seems to be the shaligram shila—the seat of Vishnu.

These two glands the pineal or Van Linga and the pituitary or the Shaligram shila lie in a level with the Ajnya chakra, thalamus, in the brain. The Pituitary is on the front, the thalamus is in the centre and the pineal gland is on the back. It seems, as if, the two diagrammatically opposite energies of

pituitary and pineal are constantly working on the Ajnya chakra, thalamus, from either side and so the mind, whose seat is in this Ajnya chakra, cannot be stable, even for a second, being swayed to and fro by these two different pulls.

We had occasion to mention the image of Jagannath before. If we look at the Figs. 19 & 20 jointly we can see a close resemblance of the image here. The thalami are the two large eyes, the pineal gland is the blunt nose, the corpora quadrigemina are the two thick lips and the fig. 20 shows the

FIG. 20



Seen jointly with Fig. 18. shows the two blunt arms of Jagannath.

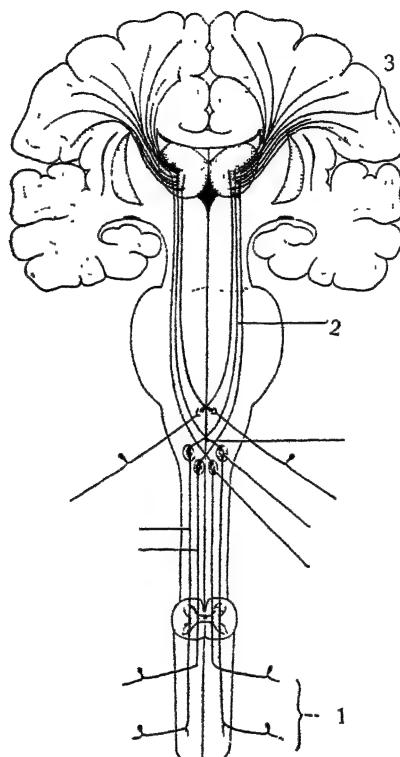
two half developed arms. The peculiarities of the forms of worship prevalent in the temple of Jagannath, prove that from the physiological functions of these parts of the brain these have grown. The thalami are the seat of connection with cerebral cortex of all sensory impulses. As will be described later on in ch. 5 of this book the 50 letters of the sanskrit alphabet express all our sensations in the world. In the Jagannath temple the deity is offered Bhog, eatables, 50 times within the 24 hrs. There is no special pooja for the pilgrims ; they simply see the deity and partake of the prosad. The offerings to the

diety, 50 letters of the alphabet, have been represented in the 50 Bhogas. The name Jagannath implies the Lord of this universe. He is the supreme Lord from whose Kinetic energy has developed the 50 letters of the alphabet as well as this universe of 5 tatwas.

Our life is a sum total of all the various sensations that we are experiencing constantly. These sensations can be classified under two heads 1. Sensations produced within our body in the different viscera and other organs, and 2. Sensations received from our environments outside the body. All these sensations reach our cerebral cortex and the actual operation of recording the sensations and feeling them is done there. It will be observed that in most cases there are three cell stations interposed in the course of the sensory impulses ; therefore, three groups of neurons are recognised :—1. The lowest sensory neurons which comprise the cells of the posterior root ganglia, and their peripheral and central processes, 2. The intermediate sensory neurons between these and the thalamus, 3. The highest sensory neurons which are the cells of the thalamus and the fibres passing from them to the cerebral cortex. Fig. 21 clearly shows these three sets of fibres. It is to be noticed that all sensations, whether from inside or outside of the body, end in the thalamus whence a new set of fibres carry them to the cerebral cortex. Thus thalamus is the main controlling station in the path of all the sensations. It is well known that the sensations are felt only when mind is connected with them. If the mind be engaged otherwise the sensory stimulus will enter upto the thalamus no doubt but will not be transmitted to the cerebral cortex, and as such we will have no knowledge of that sensory stimulus. Mind, therefore, acts as the controller in the thalamus. It is mind, so to speak, which gives connections with the cerebral cortex for receiving the various sensations. Therefore, we may call the thalamus to be the seat of mind and the Rishis have described the Ajnya chakra by the name of Manasa chakra also, which shows that they also held the thalamus to be the seat of

mind. The fickleness of mind is caused by the innumerable sensations that are constantly pouring into the thalamus from

FIG. 21



The Sensory path. (Diagrammatic representation)

1. Fibres from body surface to cells in spinal medulla and medulla oblongata etc.—This is the Vahir Lakshya.
2. Fibres from these nuclei to the thalami—this is the Madhya Lakshya.
3. Fibres from the thalami to the cortex cerebri—this is the Antara Lakshya.

all over the body both internal and external. All of them demand connection with the cerebral cortex and mind like the telephone operator is ever busy giving these connections. If we can stop this incessant flow of sensations in the thalamus by any means, our mind will be calm. To find the means of doing this we look to the connections of the thalamus. These are with the scattered nuclei of grey cells in the substance of the brain as well as with grey cells in the spinal cord. We are to cut off or block these connections

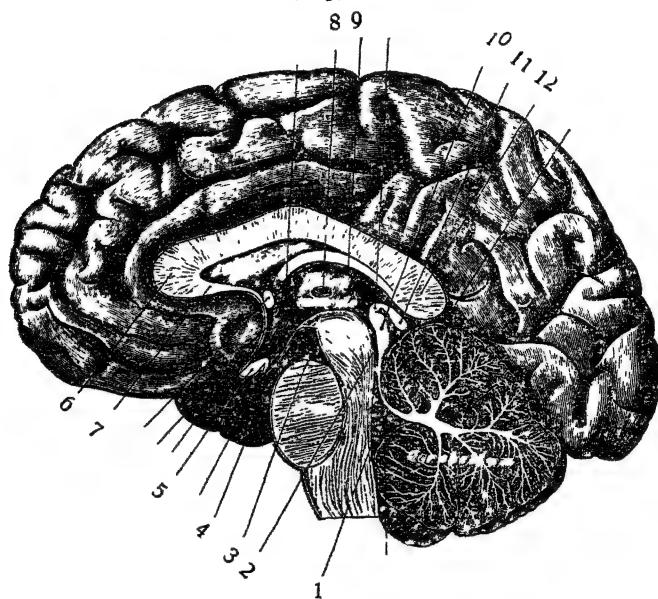
one by one, and when all such connections are blocked our mind will loose its fickleness and will be calm.

The hind brain is the most active part of the whole brain. It contains important centres which (1) controls the heart and the respiratory apparatus, (2) exerts control over the alimentary tract and its derivatives, (3) has connections with the sense of hearing and power of phonation and (4) has synergic control over the musculature of the body. These important functions are common to all animals and these are constantly working in the body, demanding constant attention from the mind to get connections with the cerebral cortex. Therefore, in all animals and man, mind is constantly busy with this part of the brain and has very little time to pay attention to the calls from mid-brain and fore-brain, unless these calls are very very urgent. The functions of the hind brain are almost same in all animals and man, and as such the Rishis have called the general run of men whose mind is constantly working in this part of the brain as belonging to the Pashu Bhava, animal nature. One will have to control the activities of this part of the brain if he wants to get over the fickleness of the mind and to calm it slowly. Therefore, in the Tantras the first Sadhana, attempt, to get this calmness of the mind, has been called the Pashu-bhava sadhana. When by constant practice he is able to lift his mind and engage it more constantly in the mid brain which has the centres for higher visual and higher auditory functions, he is called a Veera sadhak. He is called a Veera hero, because he has successfully conquered the hind brain and has been able to free his mind from the bondage of the hind brain. In doing this he has successfully overcome the constriction here, called the Brahma granthi. The next attempt is to raise the mind still higher and to keep it constantly in the fore-brain. When he succeeds in this he has practically shut out all the connections of the thalamus with the various sensory impulse carrying fibres. He is then called a Divya or holy sadhak. In this state his mind gradually becomes calm, as the never ending demands of the

various impulses on it, have ceased. But this is not the end but the beginning of another set of descriptions. We have quoted before from the Vamakeswar Tantra and the Rudra-yamal Tantra, the descriptions of parts located beyond the Ajnya chakra. We now try to identify these.

Fig. 22 will help us in identifying these parts. From the quotations of the Vamakeswar Tantra and the Rudra-yamal Tantra, written before we know that above the Ajnya chakra is

FIG. 22



A median sagittal section of the brain.

1. Fourth ventricle—the Yonisthan.
2. Aqueduct of Sylvius—the Brahma randhra.
3. The third ventricle—the Kshir Samudra.
4. Infundibulum going to Pituitary—the Van Lingam.
5. Fornix—the Rodhini.
6. The corpus callosum—the Sidha Kharga.
7. The cavum septum pellucidum—the Shunyasthan.
8. The choroidal plexus—the Ardha Chandra.
9. The massa intermedia—the Poorna Chandra.
10. The corpora quadrigemina—the 4 hills Kamrup etc.
11. The Pineal gland—Van Lingam.
12. The posterior end of corpus callosum—the handle of Sidhdha Kharga.

a place full of water. This has been called by various names, Varuna Loka, Kshira Samudra etc. In its centre there is an island which has been called the Poorna Chandra, full moon, or

Mani deepa, the island of gem. Above it is an Ardha chandra, half moon, which is always secreting Amrita, nectar. This nectar overflows the universe and nourishes it. Above this is the Rodhini which closes the entrance to the Shunyasthan, vacant place. This Shunyasthan is a triangular space and the seat of the Maha-Vindu, The Great Point. Above it is an organ called the Siddha Kharga, above that is the Preta-Veejasthan and above that is the Moola-shakti kendra. Acharya Shankar in his Mahavasya of Vedanta, at the end of the chapter Sharirika, has described two lakes called the Ara and the Nyaya as located beyond the Varun loka, one on the right and the second on the left of the Varun loka. The Brahma-puri is situated beyond the lakes on the shores of these two lakes and if one can go there he will not have to return to this world again. Comparing this description with the Fig. 22 we find that the Varun loka or Kshira samudra beyond the Ajnya chakra is the third ventricle. The Poorna chandra, full moon, in its centre is the massa intermedia. The chrioidal plexus in the third ventricle satisfies the description of the Ardha chandra : and the secretion of the cerebro-spinal fluid by the plexus is the secretion of the nectar and the C. S. fluid overflows the whole brain and nourishes it. In front of this Ardha chandra is the Rodhini which is shown in the fig. The cavum septum pellucidum is the triangular Shunyasthan & in its centre is the seat of the Maha-Vindu, the Great Point. Above it the corpus callosum is the Sidha-kharga, as its shape is like a kharga, the sacrificial sword. The white matter of the cerebrum above it is the Preta-Veejasthan. There are no grey cells in this white matter here and, therefore, this space has been called Preta, a figure without life. The grey cells on the cortex cerebri is the Moola Shakti Kendra, the root centre of all energy. The two lateral ventricles one on the right and the other on the left are the two lakes Ara and Nyaya as per description of Acharya Shankar, and his Brahmapuri is the same as the Moola shakti kendra described above. We have

not given the reasons of this identification, as to do that it would be necessary to fully describe the various processes of the Yoga Sadhana and we propose to deal with them in the different books to follow this one as expressed in the forward already.

It becomes clear from these descriptions that the word chakra has been used by the Rishis for the nuclei of grey cells. We know that these grey cells are the generators of energy in the body. Modern anatomy teaches us that these nerve cells are chiefly located as follows (1) On the cortex of the cerebrum and the cerebellum, (2) within the substance of the brain as discreet nuclei and in the substance of the spinal medulla, (3) In the ganglia on the posterior nerve roots of the spinal nerves and the ganglionated sympathetic chain by the side of the vertebral column, and (4) as ganglia of the sympathetic nerves and other sensory nerves scattered in the abdomen chest etc. So far we find that the Rishis have described the discreet nuclei of the grey cells in the substance of the brain under the name of Sat-chakras. They have not omitted the descriptions of other locations. The chakras mentioned in Rudra-yamal quoted before appear to be the sympathetic ganglia. The Tula chakra with its 32 granthis by the side of the Merudanda is the ganglionated sympathetic cord with the posterior root ganglia of the spinal nerves. The number tallies with that in modern anatomy. Fig. 23 shows the location of various sympathetic ganglia and in it we have shown the corresponding chakras of the Rudra-yamal. The figure will make the identification more clear than a lot of writing.

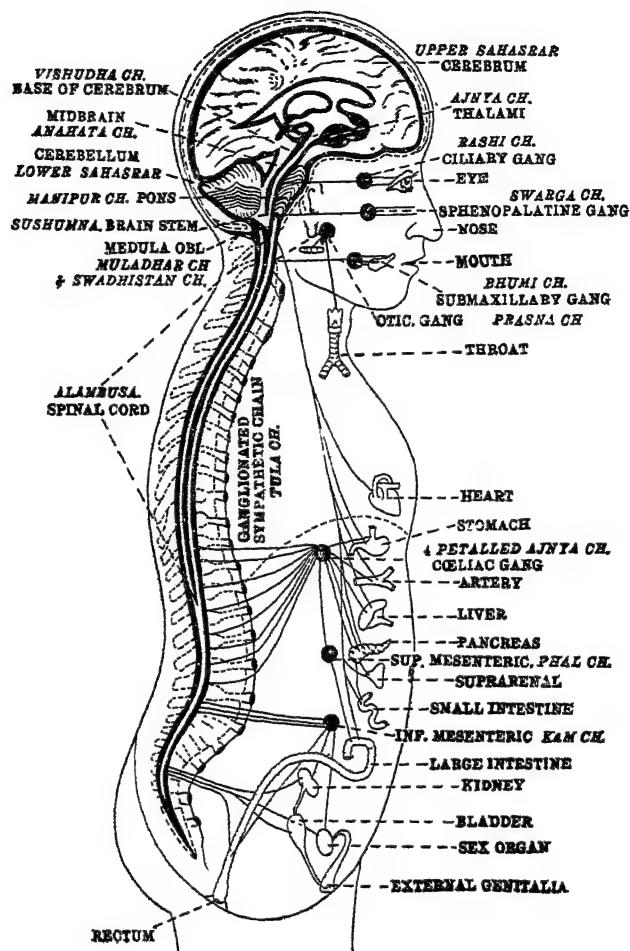
The only part left is the description of the cerebral cortex. This has also been described by the Rishis under the term Brahma chakra. But to follow that description and to try to locate them, we must always remember the special rule of Naya, logic already quoted. The energy aspect has been described and we will have to find out the apparatus aspect :—

अकार चायुगकारन्द्र मकारो विन्दु संयुतः ।
जिथा मात्रा स्थिता यत् तत् परंजगेतिरोमिति ॥

न वधृते कर्मचारी पाप कोटि शतैरपि ।
 आश्रेयी प्रथमा मात्रा वायवेण्णा वशानुगा ॥
 भानु मण्डल सङ्काशा भवेन्मात्रा तथोन्तरा ।
 परमाचार्द्धं मात्रा च वाहणीं तां विदुर्बुधाः ॥
 कालवयानका कषि तासा मात्रा प्रतिष्ठित
 एष उँ काराखगतो धारनाभिः निवोधत ॥
 योषिणी प्रथमा मात्रा विदुर्माला तथा परा ।
 पतङ्गी च तृतीया स्याव्यतुर्थी वायु वेगिनी ॥
 पञ्चमी नामधेया च पष्टी चैन्द्री विधियते ।
 सप्तमी वैषं वी नाम शङ्करी च तथाष्टमी ॥
 नदमी महती नाम ध्रुवेती दशमी मता ।
 एकादशी भवेन यौनी ब्राह्मीति द्वादशी मता ॥

It is stated that the word Om is the root of all energy. This Om has got four parts viz., (1) the letter अ (2) the letter उ (3) the letter म and the half letter Nada and Vindu". The letter अ is under the influence of Fire, Agni, the letter उ under the influence of Vayu, air, the letter म is under the influence of Aditya, sun, and the half letter is under the influence of Varuni. These four parts are each divided into three, and thus there are a total of 12 sections of the great Om. The names of these 12 parts are—1. Yoshini, 2. Vidyunmala, 3. Patangi, 4. Vayu-vegini, 5. Namadheya, 6. Aindri, 7. Vaisnavi 8. Shankari, 9. Mahati, 10. Dhruva, 11. Mouni, and 12. Brahmi. According to modern anatomy the cerebrum is first divided into four parts viz., (1) The frontal, (2) The temporal, (3) The parieto-occipital and (4) The medial. Each of these are again subdivided mainly under three parts, viz., the superior, middle and the inferior. These have been named as gyri. The frontal region controls the heat production of the body. Clinically we get frontal headache as a symptom in cases of high fever. The temporal region controls hearing and speech and any trouble of ear or throat is accompanied by a temporal headache. The occipital region controls vision and defects of vision is accompanied by occipital headache.

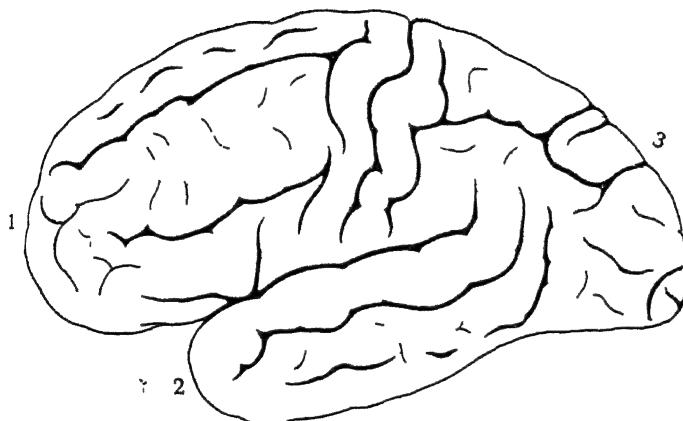
FIG. 23



The medial region controls smell and clinically drunks complain of a splitting headache in the core of the head as an after effect of intoxication. In comparing this modern knowledge with the description of the letter Om we find that the frontal region of the cerebrum has been called the letter अ and this has been rightly placed under Agni, fire, as this part controls body heat or fire. Similarly the letter इ points to the temporal region, and as hearing and speech both are produced with the help of the atmospheric air rightly it has been placed under Vayu, air. The third letter उ points to the occipital region which governs vision. Vision being subordinate to

light of the Sun, this letter is placed under him. The half letter " points to the medial region. The word Varuni in sanskrit means wine and by placing it in charge, the conception of this region controlling intoxication is clearly demonstrated. Fig. 24 & 25.

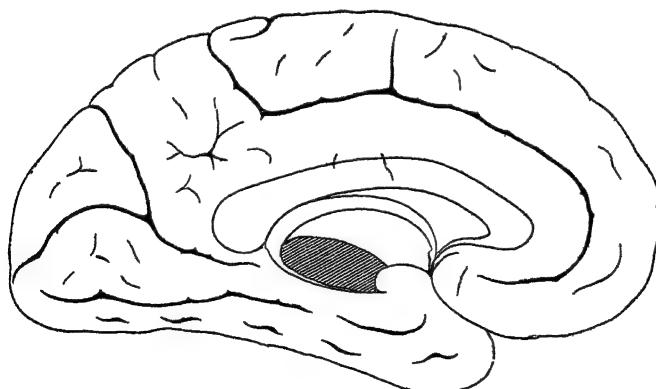
FIG. 24



Outer surface of the cerebrum.

1. The frontal part with its superior, middle & inferior Sections,
2. The temporal part " " "
3. The occipetal part " " "

FIG. 25



Medial part of cerebrum showing the three divisions.

All descriptions generally begin from above and go downwards and on this assumption the twelve parts of the letter Om are identified with the twelve gyri of the cerebrum as follows :—

Parts of letter Om	Parts of Cerebrum
I. Agni or region of the letter.	I. The frontal region of cerebrum
1. Yoshini	1. The superior frontal gyrus.
2. Vidyunmala	2. The middle frontal gyrus.
3. Patangi	3. The inferior frontal gyrus.
II. Vayu region of letter	II. The temporal region of cerebrum
4. Vayu-vegini	4. The superior temporal gyrus.
5. Namdhyeaya	5. The middle temporal gyrus.
6. Aindri	6. The inferior temporal gyrus.
III. Sun region of letter	III. The parieto-occipetal region of cerebrum
7. Vaisnavi	7. The superior parietal gyrus.
8. Shankari	8. The middle parieto-occipetal gyrus.
9. Mahati	9. The inferior parietal gyrus.
IV. Varuni region of the half letter	IV. The medial region of cerebrum
10. Dhruva	10. Cingulate gyrus.
11. Mouni	11. Cuneus, precuneus & lingual gyrus.
12. Brahmi	12. Hippocampal gyrus.

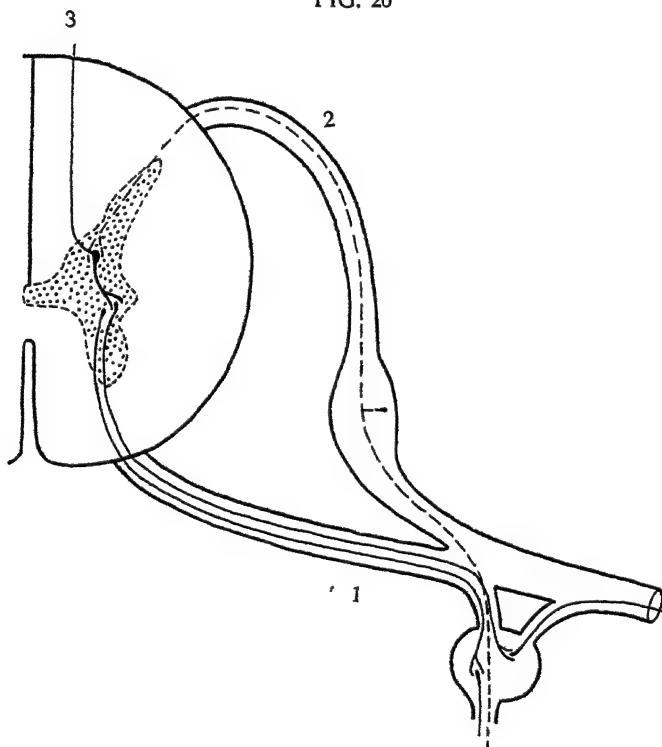
All these parts are seats of energy and concentration on these regions produces various results which have been described in detail in the shastras and which we will also describe when details of the various systems of Yoga will be

taken up in the other books of this series. Chakras are also seats of origin of energy ; the nadis, nerves, carry this energy from the chakras to the Adhars, bases, where the energy acts. As already stated the number of adhars are 16 in number and these are situated in the parts named in the sthoola, gross, body. Thus there is a fixed and constant relation between the various chakras and adhars. Names of body-parts like anus, penis, naval etc have been used for both the sthoola, gross, as well as for as the Linga sharir and has caused this confusion. The chakras are in the Linga sharir and adhars in the sthoola, gross body. When one is directed to concentrate on Mooladhar, for example, he will have to imagine the chakra generating the energy in the Linga sharir, the particular nadi conveying the energy from the chakra to the adhar and also the adhar in the sthoola sharir, where the energy will act and its result will be the subject of observation. This is the secret of the process of concentration as advised by the Rishis. We know that the nerve centres can be stimulated by deep concentrated thought and if we practice as per the above rules we will be able to note the actions of different parts of the brain and thus will be in a position to verify the statements of the Rishis.

Some physiologists hold that our life is a sum total of all reflexes. The sensory nerve endings in the body, both on the surface as well as in viscera etc., are stimulated by external influences and the sensory impulse passes inward to the centres in the spinal medulla & the brain. Here the impulse may be imagined as if dividing itself into two parts ; one part stimulates the adjoining motor nuclei and the other part proceeds up to the thalamus and there, if the mind gives the connection, it goes to the cerebral cortex and the sensation is recorded and felt. The motor nuclei, when excited, produce an energy which proceeds down the motor nerve and acts on the muscles etc. which produce the reflex action. These motor nuclei are also connected with the cells in the cerebral cortex through which we can control the out-

put of this motor energy in the reflex arc. Fig. 26 shows a reflex arc and its connections. All the functions of the body viz. respiration, circulation, digestion, excretion etc. are normally carried on by the reflex arcs, and seldom the cerebral cortex is aware of these though there are connections and control, which can be brought into play at will. Some of the major reflexes, like those working the circulation, respiration etc. have grown independant, as it were, of the control of

FIG. 26



A reflex arc in spinal cord.

1. Motor nerve.
2. Sensory nerve.
3. Fibre proceeding up to brain.

cerebral cortex because mind has not given connections with the cerebral cortex at the head office, the thalamus. Due to want of use these neurons are so to speak, blocked and normally we cannot exert any control over these major reflexes even if we wish it. The regulated exercises described in the Yoga Darshan gradually clean these blocked passages and

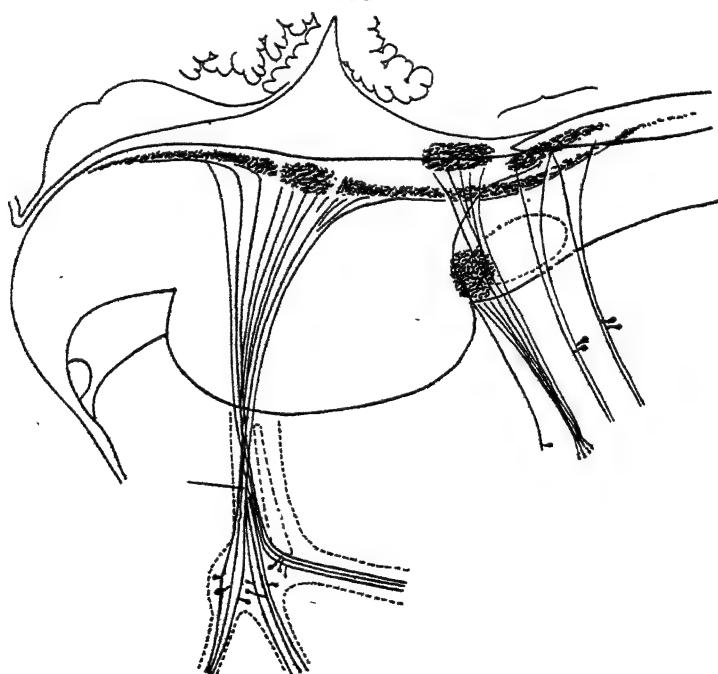
brings every reflex arc under the direct control of the cerebrum. When this is achieved we can stop any and every function of the body at our will. As stated, all the sensory neurons have two connections viz., (1) with the reflex arc and (2) with the thalami. If by Yogic practice we can control the thalami, Ajnya chakra, in such a way that no sensation is allowed to pass upto the cortex, then we shall have no sensation whatsoever, but the reflex arcs will function and carry on the works of circulation etc. in a normal way. This type of existence is the final aim of Yoga and has been called the Jeevanmukta Avasta. The size of the thalamus is about a thumb's length. The energy aspect of this organ has been described to be the Jyotirmoy Angustha praman Purus, a small thumb sized human form of energy. This escapes out of the body at the moment of death. This organ, thalami, being the centre of all sensations the escaping energy is said to be influenced by the various desires. The influence of these desires deflects the outgoing energy, so to speak, out of its normal course. If the energy could escape along its normal direction it will not condense. But any deviation of the course, caused by the influence of the most predominant desire at the moment of death, will induce condensation of the energy along a particular line. The condensation will produce all the five tatwas, electrons etc. and a new body will be formed out of these. This is the rebirth of the Jeevatma and this has been caused by the influence of the desire at the moment of death. If, as a result of the Yogic practices, one can control all his desires then at the moment of death the outgoing energy will not be deflected in any way and as such no condensation will take place and that particular Jeevatma will be called Mookta i.e., achieving Salvation. These in short are the teachings of the Rishis and we will describe these in greater detail in Book 5 of this series, when we will deal with the results of the various Yoga practices.

There is an oft quoted famous sloka, stanza, to be found in many Upanishads which runs as follows :—

द्वा सुपर्णं सयुजा समाथा समान् वृक्षं परिष्वजाते ।
तथोरण्डः पिप्पलं स्वाद्वृत्तगानशाश्वन्योऽभि चाकशीति ॥

So long all the commentators have explained these two birds mentioned in the sloka in a metaphorical sense. The bird that eats the fruits is called the Jeevatma, and the other one that have all the power of doing everything, but has never enjoyed any thing, is the Paramatma. But are these two birds really metaphorical? A glance at the figures 27, 28 will show these two birds within our brain. Of course, these have been drawn diagrammatically here, but the two together can be seen clearly in Fig. 22. The sloka also states that these birds are joined together. One of the birds shows the locations of the nuclei of origin of the sensory nerves. These bring in all sensations and so this bird is said to be eating or enjoying sweet fruits. The second one shows the nuclei of origin of the motor nerves. This one performs

FIG. 27

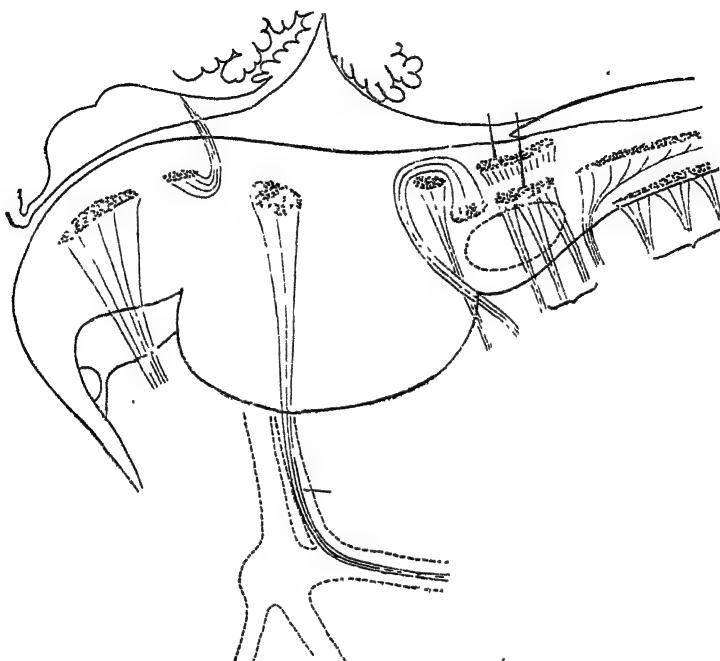


The sensory nuclei in brain stem (Diagrammatic)

Shows figure of a bird—all sensations are recorded through these nuclei—
has been called the Jeevatma.

all works but never records any sensations. From this sloka

FIG. 23



The motor nuclei in the brain stem (Diagrammatic)

Creates all motor energies but do not record any sensation—has been called
Paramatma.

we can surmise that the motor energy in our system has been called the Paramatma and the sensory the Jeevatma.

Normally the motor cells lie dormant and only act when they are stimulated by any sensory impulse; If we can stop all sensations going to the cerebral cortex the motor cells will not act and thus a condition of equilibrium will be established. This has been described by the Rishis to be the Samyavsta, a state of neutrality, which is the final goal of all Yoga sadhana.

Thus it is clear that the Great Rishis have described the whole nervous system, both central and autonomic. It is astounding to find this accurate and deep anatomical and physiological knowledge in the writings of the Rishis at such a remote prehistoric age, when according to modern theory the human race was passing through the stone age of history.

Unfortunately, it has become very difficult to get a well connected description as many important works on Yoga and Tantra are lost, some being known only by their names and from the scattered quotations in other available works. Loose translation of many of the sanskrit words caused a lot of confusion, and so long the efforts to identify the Yogic terms in the gross body was responsible for the failure. We have just shown the important glaring identifications. A research along these lines by better brains is sure to reveal many other secrets. A great field of physiological study for judging the claims of the Yogis has been opened up and we sincerely hope that this will be taken up in right earnest.

Below we are attaching a list of the Tantric names and their corresponding anatomical names. This will be a summary of the foregoing descriptions. Points for this identification, if not already mentioned, will be dealt with in other books of this series as they will crop up as we go on with the subject.

Tantric Names	Anatomical names
1. The Linga sharir	1. The whole of the brain.
2. Guhya in Linga sharir	2. The central fissure on the inferior surface of the cerebellum.
3. Linga in Linga sharir	3. The uvula in cerebellum.
4. Navi in Linga sharir	4. The centre of dorsal aspect of Pons.
5. Hridaya in Linga sharir	5. The subthalamic region in the base of the brain.
6. Kantha Linga sharir	6. The space between the two cerebral peduncles.
7. Bhru madhya Linga sharir	7. Pars orbicularis of cerebrum.
8. Adho sahasrar	8. The cerebellum.
9. Urdha sahasrar	9. The cerebrum.
10. Sushumna nadi	10. The brain stem.

	Tantric names	Anatomical names
11.	Moola kanda	11. The medulla oblongata.
12.	Kalpa yoni	12. The pons.
13.	Yoni-sthan	13. Floor of the fourth ventricle.
14.	Swayambhu Linga	14. The olive.
15.	Brahma-randhra	15. The aqueduct of Sylvius.
16.	Seat of Kula-kundalini	16. Locus coeruleus & the respiratory centre.
17.	Alambusha nadi	17. Sensory fasciculus in the anterior funiculus.
18.	Kuhu nadi	18. Sensory fasciculus in the posterior funiculus.
19.	Vruna nadi	19. Maxillary & mandibular nerve.
20.	Yasaswini nadi	20. Sensory fasciculus in the lateral funiculus.
21.	Pingala nadi	21. The right nervous terminale.
22.	Pusha nadi	22. The optic nerve.
23.	Payaswini nadi	23. The vestibular nerve.
24.	Saraswati nadi	24. Hypoglossal or Lingual nerve.
25.	Shankhini nadi	25. The cochlear nerve.
26.	Gandhari nadi	26. The ophthalmic nerve.
27.	Ida	27. The left nervous terminale.
28.	Hastijeeva nadi	28. Sensory portion of the glossopharyngeal nerve.
29.	Vishwodara nadi	29. Vagus nerve (sensory portion).
30.	Brahma granthi	30. The three constrictions in the neurenteric canal which divided the brain into three parts ; the hind brain, the mid brain and the fore brain.
31.	Vishnu granthi	
32.	Rudra granthi	

	Tantric names	Anatomical names
33.	Pashu Bhava	33. Constant location of mind in hind brain.
34.	Veera Bhava	34. Constant location of mind in mid brain.
35.	Divya Bhava	35. Constant location of mind in fore brain.
36.	Kula chakra—8 petals Vishu chakra—6 petals Mooladhar chakra—4 petals Swadhistan chakra—6 petals Manipur chakra—10 petals	36. The 34 nuclei of grey cells in the hind brain.
37.	Anahata chakra—12 petals	37. The 12 nuclei of grey cells in the mid brain.
38.	Vishudhya chakra—16 petals	38. The 16 ganglia in the sub-thalami region of the fore brain.
39.	Ajnya or Manasa chakra —2 petals	39. The two thalamus.
40.	Van Linga	40. The pineal gland.
41.	Kamrup etc. 4 hills	41. The corpora quadrigemina.
42.	Saligram shilla or the Rudrakshya	42. The pituitary gland.
43.	Chagalanda	43. The corpora mamillaria.
44.	Surya mookha	44. The foremen Mejendi.
45.	Kshiroda samudra of varun loka	45. The third ventricle.
46.	Ara and Nyaya hrada	46. The lateral ventricles.
47.	Poorna chandra	47. The massa intermedia.
48.	The Ardha chandra	48. Choroidal plexus in 3rd. ventri.

	Tantric names	Anatomical names
49.	Sudha or Amrita	49. The Cerebro-spinal fluid.
50.	Sudha ksharan	50. Secretion of C.S. Fluid.
51.	Sudha haran by surya	51. Escape of C. S. fluid through the foramen Mejendi.
52.	Shunya sthan	52. The cavum septum pellucidum.
53.	Siddha kharga	53. Corpus callosum.
54.	Moola shakti kendra	54. Grey substance on cortex cerebri
55.	Astadha prakriti	55. Eight important centres in hind brain.
56.	Moola prakriti or the Kula-kundalini shakti	56. The animal, life or Vital energy.
57.	Purna gyanum	57. The psychic life or consciousness.
58.	Sookshma Vayu or the nadi rashmi	58. The nervous energy.
59.	Pran Vayu	59. Nervous energy of the inspiratory centre.
60.	Apan Vayu	60. Nervous energy of the expiratory centre.
61.	Samana Vayu	61. Nervous energy of the cerebellum.
62.	Udana Vayu	62. Nervous energy of the basal ganglia.
63.	Vyan Vayu	63. Nervous energy of all the ganglia scattered in the body.
64.	Dhananjaya Vayu	64. The atmospheric air.
65.	Tula chakra	65. The ganglionated sympathetic cord.
66.	Kama chakra	66. Inferior mesenteric ganglia.

	Tantric names	Anatomical names
67.	Phala chakra	67. Superior mesenteric ganglia.
68.	Four petalled Ajnya chakra	68. Coelic ganglia.
69.	Prasna chakra	69. Otic ganglia.
70.	Swarga chakra	70. Sphenopalatine ganglia.
71.	Bhumi chakra	71. Submaxillary ganglia.
72.	Rashi chakra	72. Cilliary ganglia.
73.	Nadi mukha	73. Peripheral nerve endings.
74.	Poorak of sukhsha vayu	74. Sensory nerve energy.
75.	Kumbhak of sukhsha vayu	75. Inhibition of reflexes.
76.	Rechaka of sukhsha vayu	76. Motor nerve energy.
77.	Sweta dwipain Sudha samudra	77. The brain floating in C. S. fluid.
78.	Kalpa Vriksha	78. The whole nervous system. Grey cells above are the roots, spinal cord is the trunk, nerves are branches, and nerve endings are the leaves.
79.	Agni in deha	79. Heat generated as result of oxidation in the body.
80.	Shakti chalan kendras	80. The reflex centres of the nervous system.
81.	Brahma chakra or Urdha Sahasrar	81. The cerebrum.
82.	The letter Om	82. The whole cerebrum.
83.	Seat of letter अ	83. The frontal region of cerebrum.
84.	Seat of letter ओ	84. Temporal region of cerebrum.

	Tantric names	Anatomical names
85.	Seat of letter म	85. Parieto-occipital region of cerebrum.
86.	Seat of half letter *	86. Medial region of cerebrum.
87.	Yoshini	87. The superior frontal gyrus.
88.	Vidyunmala	88. The middle frontal gyrus.
89.	Patangi	89. The inferior frontal gyrus.
90.	Vayu-vegini	90. The superior temporal gyrus.
91.	Nam-dheya	91. The middle temporal gyrus.
92.	Aindri	92. The inferior temporal gyrus.
93.	Vaishnavi	93. The superor parietal gyrus.
94.	Shankari	94. The parieto-occipital gyrus.
95.	Mahati	95. The inferior parietal gyrus.
96.	Dhruva	96. The cingulate gyrus.
97.	Mouni	97. Cuneus, pre-cuneus, & lingual gyri.
98.	Brahmi	98. Hippocampal gyrus.
99.	Chakra veda or stambhan	99. Inhibiting the action of a nuclei.
100.	Maha-vindu sthan, or the place of origin of mind	100. Centre of the cavum septum pellucidum.

The above list is not complete or exhaustive. Much work is to be done yet to make it complete. This list will however serve its purpose of being the pioneer in the field.

Future research may require modification or change of the identity established here. This list has established the apparatus aspect of the Yoga system. But the Rishis have always advised the student of Yoga to fix his attention on the energy aspect of these apparatuses. That is why we find that the innumerable commentators of the original sashtras have only been describing the energy aspect, and completely ignoring the apparatus aspect. But a knowledge of the apparatus aspect is also essential as has been definitely mentioned in the slokas of Goraksha samhita, Yoga-swarodaya etc. already quoted.

CHAPTER V.

The value of the letters in the chakras

The Rishis have conceived that Brahman the Great One is not only omni-potent, omni-present and omni-cient, but at the same time beyond the limits of language and mind which are kinetic manifestations of the energy whereas He is the potential form. When the desire to be many, पर्कोह वहुस्याम् arose in Him this universe was created. When He wished the energy lying dormant in potential form was converted into kinetic. But energy cannot be observed if it does not act on a base or substance. Therefore, with the conversion of energy into kinetic form, the conception of a base also became essential. The Great One himself was considered to act as the base. From this conception developed the teachings of Sankhya ; The innumerable particles of kinetic energy were called Prakriti and this Prakriti was moving round the particles of Purusha and This combined Purush Prakriti was called Vyom tatwa. In Ratna Tritaya Pariksha by Appya Dikshit, as well as in Kurma Puran, the Purush of Sankhya has been called Narayan and the Prakriti has been described under the name of Haimavati. Narayan is the adhar, base, and the abode of all energy. The word Narayan is derived from the root Nara, meaning water or Jnyana, knowledge, and Ayana, meaning abode. So the word Narayan means One whose abode is in water, or One who is the abode of all knowledge. Whatever meaning is taken, it is clear that our complete brain has been called Narayan by the Rishis, as the brain is the seat of all our knowledge and it is floating in the C. S. fluid within the bony cavity of the head. The nervous energy, therefore, is Prakriti or Haimavati.

Therefore, the very first conception of the begining of creation, i.e., when potential was converted into kinetic, was of two different "ideas" viz., 1. the Adhar, base, and 2. the energy. Adhar was subdivided into 5 forms, the Pancha-tatwa ; viz., solid, liquid, gas, atom & electron as already described

in 2nd. chapter. Energy may be many or one but we have only 10 organs of senses for catching and appreciating the energy, so it is automatically classified under 10 heads. These 10 different types of energy have been described by the Rishis as the 10 Maha-Vidyas. As already described, sound is the first manifestation of energy and these 10 types of energy acting on the 5 tatwas produce $5 \times 10 = 50$ different types of sound. When the first conversion of potential into kinetic takes place, a sound is produced which has been called Om ; and as the conception of Adhar and energy grew after this conversion, all the 50 varieties of sound formed, have been described as if coming out of the first sound Om. These 50 sounds are the 50 alphabets of the Sanskrit language. As the whole universe is the outcome of sound, as already described, these 50 letters of the Sanskrit alphabet are called Matrica, 'the mother of the world.

The Bharatiya Jyotish sashtra has been loosely translated as Astronomy and Astrology. But there is some difference ; Whereas, the words Astronomy and Astrology are derived from the Greek root Astron meaning star, the word Jyotisha is derived from the Sanskrit root "Dhyuti" meaning light. Due to this fundamental difference many of the terms of Jyotisha sashtra could not be translated properly and the translations also fail to convey the correct idea. One of such terms is the word Nakshatra. This has been translated as meaning a collection of stars. But really it has a far deeper meaning and conveys many ideas. As we are not dealing with Jyotisha sashtra here we will deal with that aspect which concerns us. There are 27 Nakshatras and they are used frequently for predicting future results according to the rules of Jyotisha sashtra. The nakshatras have been used in the Tantras also, and it is this aspect which we will describe here. Every thing in this world being made up of sound, the nakshatras are no exception and we are showing in a tabular form below the composition of the different nakshatras as described in the Vamakeswar Tantra Sl. 30, 31, 32. Ch 8.

युग्ममेकं त्रयं वेदा एकमैकं द्वयं ततः ।
एकं युग्मं युग्ममैकं युग्मं युग्मं युगं क्रमात् ॥
एकं युग्मं त्रयं चैकं त्रयमैकैकमैककम् ।
युग्म मैकं त्रीणि युग्मं विन्दु विसर्गं युक् ॥
नक्षत्राणां क्रमाद्वर्णं निर्णयः कथितं प्रिये ॥

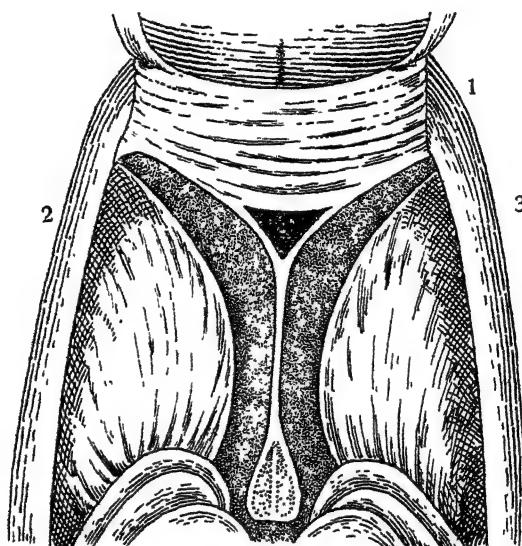
These slokas mean that we are to put two letters from the begining under the first nakshatra, one letter under the second nakshatra and so on as arranged in the following table.

Name of Nakshatra—letters.	Name of nakshatra—letters
1. Aswini—अ आ	15. Swati—ह
2. Bharani—इ	16. Vishakha—ठ ण
3. Krittica—ई ऊ	17. Anuradha—त थ द
4. Rohini—ऋ ऋ ल ल	18. Jesthya—ध
5. Mriga-shira—ए	19. Moola—न ए फ
6. Ardra—ऐ	20. Purvashada—व
7. Punarvasu—ओ औ	21. Utterashada—भ
8. Pushya—क	22. Shravana—म
9. Ashlesha—ख ग	23. Dhanistha—य र
10. Magha—घ ङ	24. Shatavisha—ल
11. Purva-phalguni—च	25. Purva-bhadrapada—ब श
12. Utter-phalguni—छ ज	26. Utter-bhadrapada—ष स ह
13. Hasta—ऊ ज	27. Ravati—अं अः त्त
14. Chitra—ट ड	

With the help of these 50 alphabets the Rishis have established a wonderful relation between the conception of Self and the universe. In the central vacant place in the brain called Shunyā sthan, the cavum septum pellucidum, is the seat of Self, Maha-Vindu, the great eternal point. According to the conceptions of the Rishis, it is here that the first transformation of Potential into Kinetic takes place as has been described in the "Pradhanic Rahasya" of the "Doorga sapta shati". At the moment of this conversion a sound is produced. This sound is represented by the letter

Om. The sound fills the vacant place and hits the sides of the triangle. As a result of this impact 50 different sounds are produced as already explained. These are represented by the 50 letters of the alphabet. The Rishis have described the location of these alphabets on the arms of this triangle. Fig. 29. shows this arrangement. This triangular space has been called the "Guru pada padma", the lotus feet of the

FIG. 29



Showing Fornix—Rodhini ; Lateral ventricles—Ara and Nya Hradas ; Cavum septum pellucidum—Shunnya sthan : Corpuscallosum—Sidhdha Kharga.

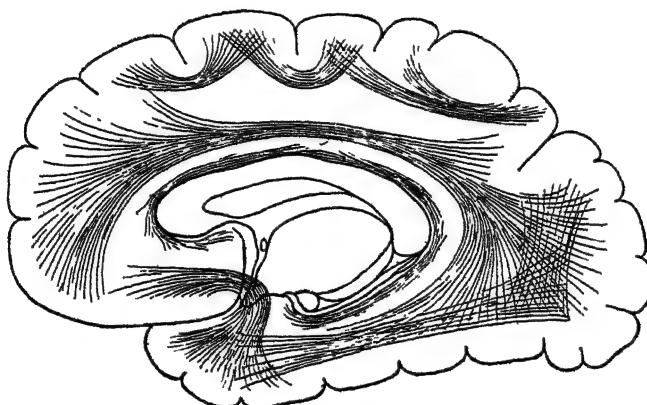
1. The upper wall of Shunnya sthan. The letters of Sanskrit alphabet from अ to ओ are located on this wall,
2. The right lateral wall of the Shunnya sthan. The letters from क to त are located on this wall.
3. The left lateral wall of Shunnya sthan. The letters from ख to न are located on this wall.

The remaining letters ह ल ष are located inside the triangle on the three corners. The area is also called the Guru Pada Padma—where the lotus feet of the Guru—preceptor is located.

Guru, preceptor. The conception of the radiation of this central energy is as follows :—Imagine a triangular room, the sides of which are made up of different coloured pieces of glass, there being 16 pieces of glass in all on each wall. The three corners have three separate pieces. Thus there are in all 51 pieces of glass panes all of different colours. There is

a very brilliant white light in the centre of the room. The inside of the room is full of white light. This central white light is the letter Om. The light passing out of the room is coloured according to the colour of the glass through which it passes. These 51 glass pieces represent the 51 letters including the one joined letter क्ष ksha. The central light or energy passes out and reaches the cortex cerebri along a group of nerve fibres shown in Fig. 30. The different areas of the cortex

FIG. 30

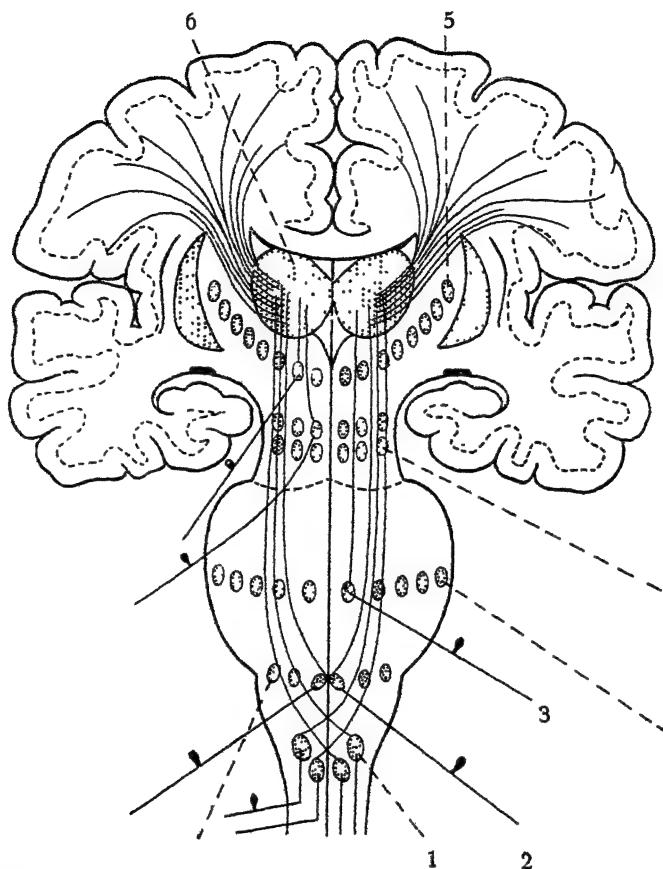


Association fibres within the cerebrum. Showing different lines of passage of stimulus.

are lighted up by different lights, so to speak, and the same alphabet is similarly imagined there also. The nerve cells in the cortex cerebri develop energy but it is the stimulus from the central triangle which excites them. This nervous energy passes along different fibres to the nuclei of grey cells located in the substance of the brain, which have been described as the petals of the chakras. Fig. 31. The energy generated in the grey cells of these petals pass outwards and reach the outer surface of the body where also the corresponding letters of the alphabet are located.

Every one practising sadhana according to the teachings of the sashtras has to perform Matrika nyasa. In this one directs his mind on certain parts of the body where one letter

FIG. 31



Diagrammatic representation of the six chakras in the brain showing lines of passage of stimulus.

1. Mooladhar chakra.
2. Swadhisthan chakra.
3. Manipur chakra.
4. Anahata chakra.
5. Vishuda chakra and
6. Ajnya chakra.

of the alphabet is imagined. The rules of this are as follows :—

ललाठ मुख वृत्तान्ति श्रुति द्वाणे षु गरडयोः ।
 धोष्ट दन्तोत्तमाङ्गास्यादोः पत् सन्ध्या प्रकेषु च ॥
 पाश्वयोः पृष्ठतो नाभौ जटरे हृदये हंसके ।
 ककुद्यंशे च हृत् पूर्वा पाणि युगे तथा ॥
 लट्टरानन्दयोर्निरस्ये व्यामातृकाणां यथाक्रमम् ॥

This means that the letters of the sanskrit alphabet are

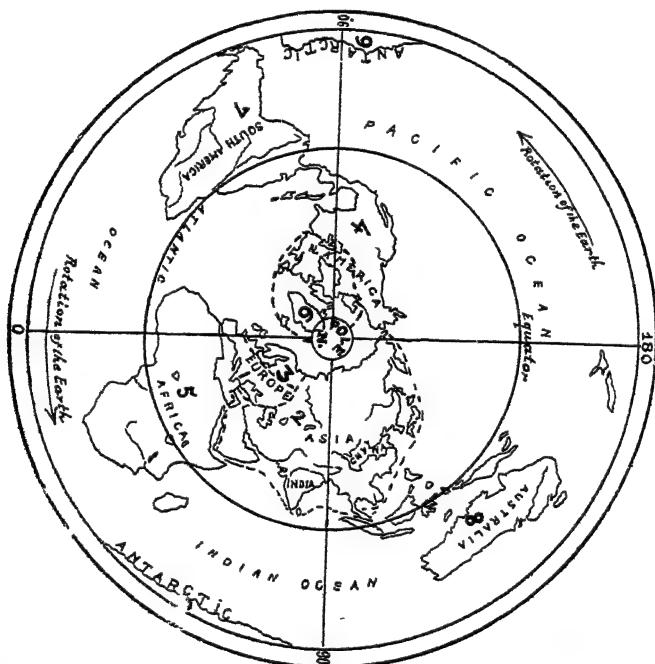
imagined as located on the various parts of the body as shown below.

1. On the fore head अ
2. On whole face आ
3. On right eye इ
4. On left eye ह
5. On right ear उ
6. On left ear ऊ
7. On right nose ऋ
8. On left nose ञ
9. On right cheek ल
10. On left cheek ळ
11. On upper lip ए
12. On lower lip ऐ
13. On upper gums ओ
14. On lower gums औ
15. On Brahmarandhra अः
16. On mouth अः
17. On right shoulder jt. क
18. On right elbow jt. ख
19. On right wrist jt. ग
20. On right metacarpo phallangial jt. घ
21. On right finger tips ङ
22. On left shoulder jt. च
23. On left elbow jt. छ
24. On left wrist jt. ज
25. One left metacarpo phallangial ङ
26. On left finger tips अ
27. On right hip joint ट
28. On right knee joint. ठ
29. On right ankle joint ढ
30. On right meta-tarsal and toe joint ढ
31. On right toe tips ण
32. On left hip joint त
33. On left knee joint थ
34. On left ankle joint द
35. On left meta-tarsal toe joint ध
36. On left toe tips न
37. On right flank ष
38. On left flank फ
39. On the back व
40. On umbilicus भ
41. On the pit of the stomach म
42. On the chest य
43. On the right shoulder र
44. On the joint of neck ल
45. On the left shoulder ब
46. Over the area from heart to the tip of right hand fingers श
47. Over the area from heart to the left hand fingers tips ष
48. Over the area from heart to tip of right leg toe स
49. Over the area from heart to the tip of left leg toe ह
50. Over the area from heart to the pelvic region ळ
51. Over the area from heart to top of head न

We have mentioned before how the Rishis have described the relation between the Nakshatras and the letters of the

alphabet. With the help of these Nakshatras they have divided the surface of the earth and the sky above. If we substitute the letters in place of Nakshatras we have a classification of the surface of earth as well as of the sky in relation with the letters of the alphabet. For showing these relations we refer to Fig. 32. the surface of the earth is divided into 9 Varshas and each Varsha is under the influence of three stars and therefore is under the influence of letters forming these stars. The following table makes it clear :—

FIG. 32



Surface of the Earth showing the nine Varshas. The Varshas are numbered.

Varshas have been identified with the help of descriptions in "Adruta Sagar".

Name of Varsha.	No. of stars.	Alphabets.	Modern names
1. Ilavrita.	3. 4. 5.	ई उ ऊ ऋ औ ल ए	Europe minus Scandinavia.
2. Bharata.	6. 7. 8.	ऐ ओ औ क	Whole of Asia.
3. Kimpurusa.	9. 10. 11.	ख ग घ ङ च	Australasia.
4. Bhadraswa.	12. 13. 14.	छ ज फ न ट ठ	Africa.

Name of Varsha.	No. of stars.	Alphabets	Modern names.
5. Hari.	15. 16. 17.	ଡ ଢ ଣ ତ ଥ ଦ	Antarctic.
6. Ketumal.	18. 19. 20.	ଘ ନ ପ ଫ ବ	South America.
7. Ramyak.	21. 22. 23.	ଭ ମ ଯ ର	North America.
8. Kuru.	24. 25. 26.	ଲ ବ ଶ ସ ହ	Scandinavia and British Isles.
9. Hiranmay.	27. 1. 2.	ଆ ଅ: କ୍ଷ, ଅ ଆ ଇ	Canadian Archipelago and Green-land.

A look at any physical map of Europe will show at once that Scandinavia, British Isles etc. were separated from the main land of Europe by the present great low land plain and formed a separate group. Similarly a physical map of North America will show the chain of lakes from the great Bear Lake in the north down to the gulf of St. Lawrence might have been a continuous sheet of water separating the north-western Canada from its north eastern portion, which together with the Archipelago north of Canada and Greenland might have formed a separate group.

Similarly the Nakshatras are divided into nine Bithis or groups of Nakshatras in the sky. Their names are as follows :—

Name of Bithi.	No. of nakshatra forming the Bithi	Letters.
1. Nag Bithi	2. 3. 15.	ଇ ଈ ଉ ଙ ଡ
2. Gaja Bithi	4. 5. 6.	କୁ କୁଳ ଲୁ ଷ ଷେ
3. Airavath Bithi	7. 8. 9. 10.	ଓ ଓ କ ଖ ଗ ଧ ଙ
4. Arshavi Bithi	11. 12.	ଚ ଛ ଜ
5. Go Bithi	25. 26. 27. 1.	ବ ଶ ସ ହ ଅ: କ୍ଷ ଅ ଆ
6. Jaradgava Bithi	22. 23. 24.	ମ ଯ ର ଲ
7. Mriga Bithi	13. 14.	ଫ ବଟ ଠ
8. Aja Bithi	16. 17.	ଢ ଣ ତ ଥ ଦ
9. Avika Bithi	18. 19. 20. 21.	ଧ ନ ପ ଫ ବ ଭ

Thus the conception seems to be that the seat of the root energy is in the Shunya sthan, cavum septum pellucidum,

within the brain. This root energy has been called Om. The 50 letters of the alphabet are placed 1. on the sides of the central triangle, 2. on the cerebral cortex, 3. on the petals of the chakra, 4. on the surface of the gross body, 5. on the surface of the earth, and 6. on the face of the sky, and show the inter-relation of these.

In book 3 of this series we will have occasion to refer to these relations in greater detail. It will suffice here to mention that the letters have been used by the Rishis to show this relation of the inner Self with the Universe. The particular type of energy generated in uttering a particular letter manifests and works in the mind, body, earth and sky, as per this relation. This explains the origin of Tirthas, holy places of pilgrimage, and also the origin of particular auspicious moments of worship of different mantras.

In the other books of this series we expect to expose and analyse the whole process of Yoga sadhana. This Book 1. supplies the preliminary essential knowledge, without which no one can join any of the four classes of Yoga, as has been forcefully expressed in the sloka of *Yoga-swarodaya* :

Om Tat Sat Om.

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ERRATA

Page	Line	For	Read
i	1	ज्ञानमान्दं	... ज्ञानमानन्दं
v	26	चतुर्था	... चतुर्धा
	”	झेयो	... झेयो
	27	भवाङ्गौ	, ... भवाव्यौ
vi	34	men	... man
vii	14	of	... c.f
viii	5	vala	... Bala
	21	Brahmagnye	... Brahmagnya
xi	26	js	... is
xii	24	मुद्यन्ते	... मुहान्ते
	26	has	... have
xiii	14	सहस्रज्ञाती	... सहस्रज्ञतो
	34	टेहस्य	... टेहस्य
xiv	27	प्रातिष्ठितम्	... प्रतिष्ठितम्
	34	Ludicrous	... Ludicrous
3	36	Kanda	... Chakra
4	19	Kundalini is also	... Kundalini also
	27	मथ्ये	... मध्ये
	28	लिङ्गां	... लिङ्गं
	31	चक्रमष्टुक्ल	... चक्रमष्टुक्ल
5	2	ज्ञान	... ज्ञान
	3	आङ्गा	... आङ्गा
	6	तन्मध्ये	... तन्मध्ये
6	27	चिक्कने	... चिस्तने
	”	झेया	... झेया
	28	यथाशृणु	... यथाशृणु
7	4	परमाक्षुतम्	... परमाङ्गुतम्
	11	सङ्गी	... सङ्गी
	15	आङ्गारुण्यं	... आङ्गारुण्यं
	19	संङ्गा	... संङ्गा

Page	Line	For	Read
8	24	विषुसङ्गे	... विषुसङ्गे
9	7	भूलाधारअदिनि	... मूलाधारादिनि
	21	आज्ञा	... आज्ञा
11	27	नाभग्रामता	... नाडग्रामता
11	26	ब्रह्मैक्य	... ब्रह्मैक्य
	29	मेरुदण्डेऽप	... मेरुदण्डेऽप
12	2	वहुरुषिणि	... वहुरुषिणि
	5	स्वयम्भु	... स्वयम्भु
	"	कं	... तं
	6	तदुद्धे	... तदुद्धे
	17	जादि	... डादि
	20	हृदयात्	... हृदयात्
	21	हृदिस्थं	... हृदिस्थं
	22	ठारडाक्षर	... ठाळाक्षर
	28	दक्ष	... चक्ष
	30	योगिनामक्षुत	... योगिनामक्षुत
	"	सिद्धिका	... सिद्धिवर्गं
	"	समभ्यलत	... समभ्यस्त
13	1	हंसलोकनां	... हंसलोकनात्
	3	आज्ञावकं	... आज्ञावकं
	4	आज्ञा	... आज्ञा
	"	गुरोराज्ञेति	... गुरोराज्ञेति
	5	तदुद्धे	... तदुद्धे
14	2	शैलं	... शैलं
	4	तदुद्धे	... तदुद्धे
	5	"	..."
	32	नाभ्या	... नाड्या
15	31	खेया	... झेया
18	30	Adhumukh	... Adhomukh

Page	Line	For	Read
20	11	भेदन्त	... भेदन्तु
	30	भरेत	... भवेत
21	4	योगविन्	... योगवित्
	14	ज्ञेय	... ज्ञेय
24	24	सर्वझाः	... सर्वञ्जः
	9	कथ	... कथं
25	2	काठिन्यादि	... काठिन्यादि
26	8	this a	... this is a
	26	Vyomo	... Vyoma
28	10	was	... has
	26	neutron	... electron
29	35	neutron	... electron
	1	Neutron	... electron
29	2	units	... unite
	19	guha	... guna
29	21	Neutron or energy	... electron or negative energy
	23	Neutron	... negative energy
29	25	neutron	... electron
	28	neutron	... negative energy
29	29	add	... and
	31	Neutron	... negative energy
30	15	neutron	... negative energy
	22	nothing	... noting
30	25	Proton	... positive energy
	26	neutron	... negative energy
31	6	there 5	... there are 5
	9	there 5	... there are 5
31	12	Cairun	... Cavum
	13	Pellaciden	... Pellucidum
35	21	skin	... akin
	22	the	... be
37	34	on	... one

Page	Line	For	Read
38	28	constricted, its	constricted in its
39	12	formin	forming
40	9	subthelamic	subthalamic
43	15	frings	fringe
	25	chrioid	chorioid
	31	cærebrum	cerebrum
47	7	sweet	sweat
	17	tissu	tissue
51	14	elementary	alimentary
	18	they	any
67	1	ज्ञान	ज्ञान
	2	स्वयम्भुः	स्वयम्भुः
	20	विश्व	विष
68	4	विलदति	विलसति
69	20	Greys	Grays
	29	nerve	nerve"
71	10	मथाभगासाद्ज्वी	मथाभगासाद्ग्न्यज्वी
72	16	retared	retarted
	31	cranical	cranial
82	6	Figs 19 & 20	Figs 18 & 20
88	35	चापुगकारन्त्र	चापुगकारन्त्र
	„	जिधा	जिधा
89	4	परमाचार्द्ध	परमाचार्द्ध
	12	यौनी	मौनो
92	3	letter.	letter अ
	10	letter.	letter उ
	18	letter.	letter म
	27	letter.	letter *
98	27	5(anatomical names column)	6
	30	6	5
99	14	Vruna "	Varuna
102	17	dwipain	dwipa in
106	26	But really	But in reality
112	12	Adruta	Advuta
		(in notes under figs)	
58	7	(fig. 6) Area	Ara
60	2	under fig 8—stomac	stomach